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VOLUME 5, NUMBER 2 • MARCH/APRIL 1994

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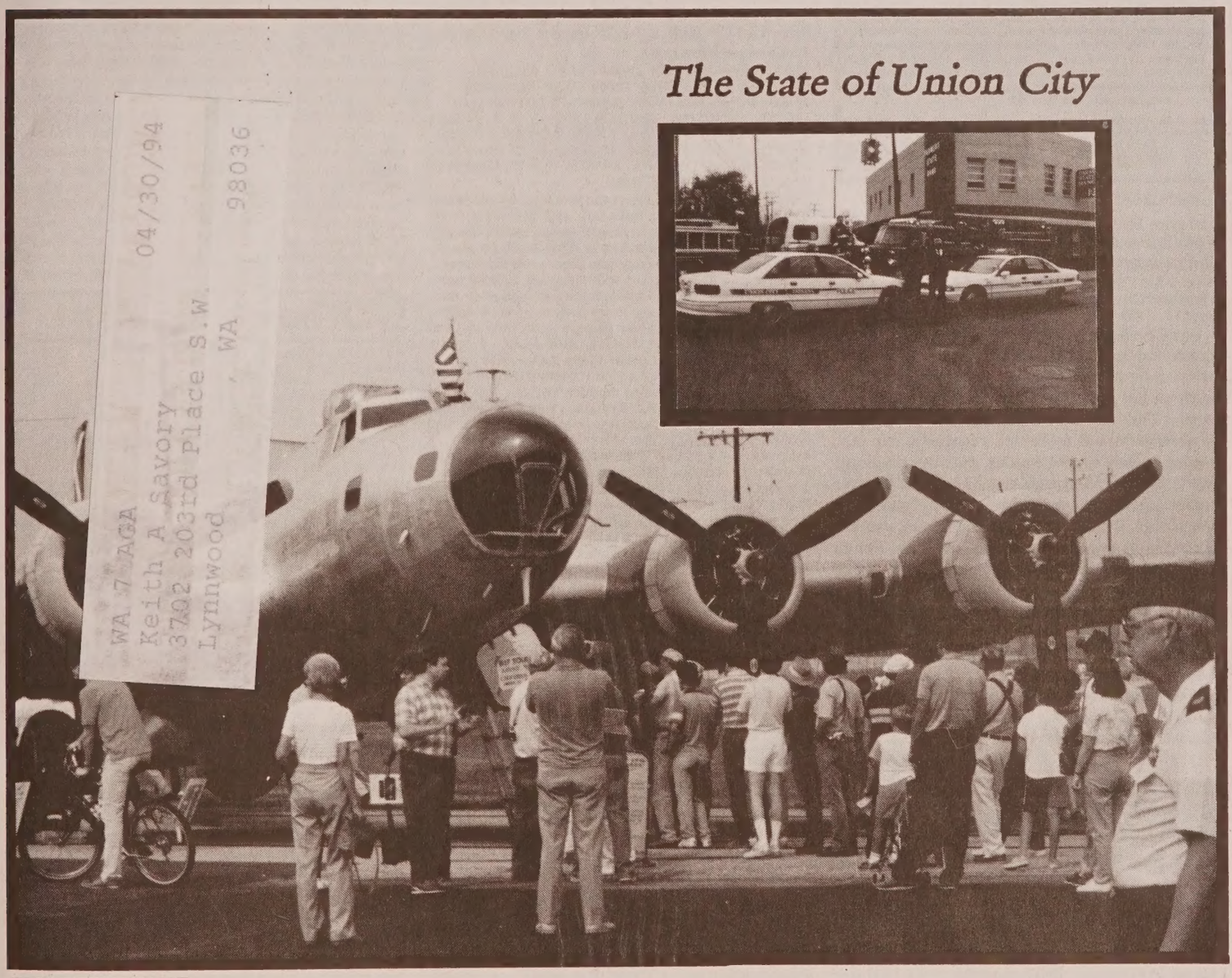

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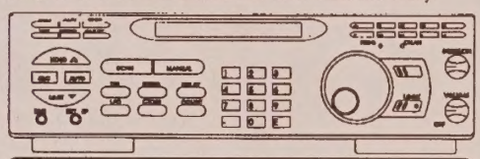

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NATIONAL SCANNING

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Pictured above: Mark Swarbrick caught this mobile ant set up in a little red wagon at an air show he attended.

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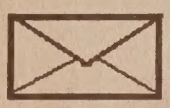
Radio In Action Radio In Action Radio In Action

Cops Can't Eavesdrop

Plantation, Florida, police detectives Mike Kago and Patrick McGowan were listening to ramdom cordless phone calls on their scanner when they heard snippets of something that sounded like a drug deal in progress. A woman named Joyce was telling an unidentified man that the supplier "just has powder, no rocks." After determining what apartment the call was coming from, they staked it out. After monitoring the home of Joyce and Edgardo Mozo for two more days, the two detectives got a search warrant and raided the home. The Mozos were arrested after cocaine, marijuana and drug paraphenalia was confiscated. At the trial, defense lawyers argued that the evidence should be thrown out because the police violated the Mozos' constitutional privacy rights by listening to a phone call made in the privacy of their own home. Prosecutors in Broward County argued that state privacy laws specifically exempt cordless phones because they transmit over radio waves and therefore have no reasonable expectation of privacy. Circuit Judge Robert Tyson agreed with the state saying that the Mozos should have known that cordless phones can be picked up by practically anyone, making them anything but private.

The Mozos pleaded no contest to possesion of cocaine and marijuana and were sentenced to three years probation. Then they appealed. Last month the Florida Fourth District Court of Appeal agreed that cordless phone calls were specifically excluded from the state's privacy and wiretap laws because they were so easy to monitor. But, under the state Constitution, any conversations made within one's home are considered private -- even though they were using a cordless phone which is not private. The end result: Police in Florida cannot randomly intercept cordless phone calls made at home even though the purpose was to curb crime. Such methods, wrote the court, are "the hallmark of a totalitarian society. It is the very antithesis of a free society."



Be a NatScan Reporter.

Scan you local newspaper for stories about radio in action. Then send the clippings to NatScan, Box 360, Wagontown, PA 19376

Baby Monitor Prompts Child Abuse Investigation

A Columbus, Ohio woman who said she heard the sounds of a mother screaming and cursing at a child on local baby monitor frequencies prompted action by the Franklin County sheriff's office and local child abuse authorities. The woman listened to what she considered verbal abuse for two weeks on her radio, then made a recording of the sounds and filed a complaint with the child welfare agency. On the tape, a woman curses and yells at a child as it screams. Deputies questioned a couple across the street from the woman after searching door to door for a baby monitor. Investigators later examined the neighbor's infant boy and young daughter. They planned to question the parents further.

Manchester Man Monitors Burglary-in-Progress

It was a radio listener who tipped off police to a pair of very sophisticated burglars operating in Manchester, New Hampshire. According to police, a Parks and Recreation employee happened to overhear what sounded like a burglary in progress on his radio. During one transmission, a man said that he was in the last bedroom and soon could be picked up at the drop-off point. That's when police swung into action. Before it was all over, police were able to round up two men. "[The radio listener] got suspicious and called us," said Detective Capt. James Stewart. "Had he not, we would still be chasing these people." Officials added that the burglars may have been operating in the Manchester area for as long as six months. "It would appear from the electronic equipment [the burglars had] that this was an extremely sophisticated operation."

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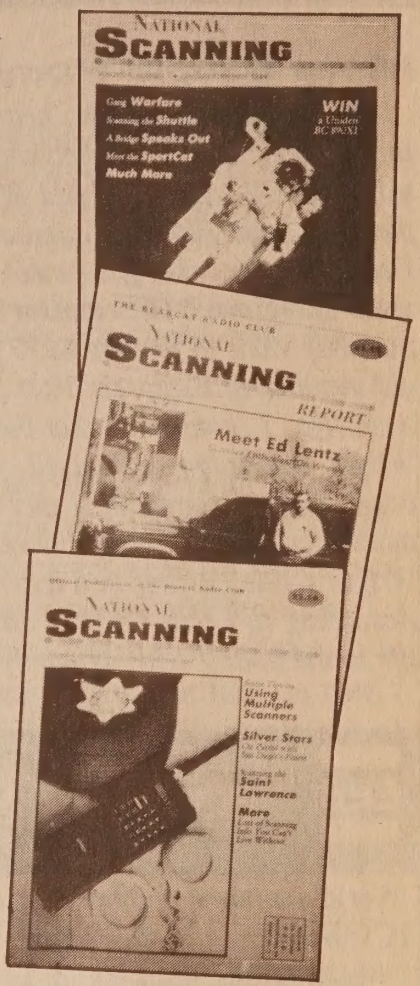

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Radio In Action Radio In Action Radio In Action

More Stupid Homeowner's Association Tricks

An Explorer Scout who helped save six people aboard a boat stranded off Dana Point in California is now in icy water with his homeowner's association, which purportedly wants to fine him for the way he did it -- using his CB radio. Richard Wright and two other CB operators responded to a distress call from an 18 foot pleasure boat. Through questions and communication relays, they guided a Coast Guard helicopter and an Orange County sheriff's patrol boat to the stricken vessel five miles offshore. Wright's good deed had a very short afterglow. "The resident of the [homeowner's] association called our manager and he notified my mom that they want to fine me $150 for using my CB radio inside the association grounds," said Wright, a 20-year old member of Explorers Post 540. Sure enough, Ron Meixell, president of the 124-member Moulton Parkway Assn. No. 1, confirmed that the association's board will decide at its meeting next week whether to fine Wright. According to Meixell, the youth promised three months ago to stop using his CB radio after several condo owners complained that it interfered with their cordless telephones and televisions. "I think he and his mother are simply using this rescue thing to help them out," Meixelll said. The Coast Guard, however, is on Wright's side, saying in a letter to the association that it is "ludicrous to fine the boy for saving lives." According to Coast Guard Petty Officer Randolph Reid, "It could have ended up in serious injury or loss of life to the boater and his family."

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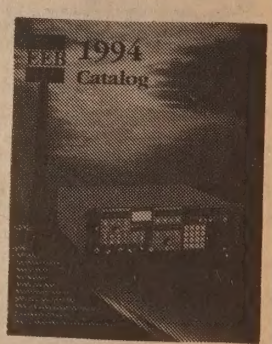

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Radio In Action Radio In Action Radio In Action

Tough Sailing

Conscientious, law-abiding boat owners are about to be hit again with a new user fee, more than tripling the cost of a new license for a marine radio. The present cost of a station license is $35 and it's good for 10 years. That will now go to $45 with a "regulatory fee" of $70 tacked on. That brings the total registration fee to $115.00. The new fee goes into effect on May 1st. Says Cy Liberman, boating columnist for the Wilmington, Delaware, *News Journal*, "In the real world this effects only those boaters who abide by the law and bother to get the license for their VHF radios." It's estimated that 20 percent of boaters don't bother to buy the license."The sad part of the situation is that a marine radio is an extremely important safety device. The increase in the fees will be disincentives resulting in more boaters ignoring the need for a VHF marine radio."

Scanner Listeners + Police = Success

Scott Township, Pennsylvania, police chief Doyle Winn is crediting scanner listeners with helping police nab a 16-year-old fugitive. According to police, the juvenile eluded police in a successful game of cat-and-mouse for most of the day. During that time, alert citizens with scanners kept track of the action and called police with tips that kept them close on his tail. The boy, who was identified as a youth that had escaped from a Carbon county juvenile detention center, became the subject of the search after being stopped for driving a stolen car. After ramming several patrol cars, he fled on foot, attracting the attention of seven different police departments who cooperated in the search. Still, it was the scanner listeners who did the job. "If it hadn't been for the people listening on their scanners, we wouldn't have gotten him," said Chief Winn.

More Cordless Phone Frequencies

Citing congestion on the nation's millions of cordless phones, the FCC is proposing the addition of new frequencies. The original cordless phones operated just above the AM broadcast band between 1600 and 1800 kHz. Later, they were assigned to the 46 and 49 MHz frequencies commonly in use today. Now, if things go as planned, you'll be able to tune in the phones on the 43, 44, and 48 MHz bands as well. Here's the proposed numbers:

base	handset	base	handset
43.72	48.76	44.18	49.20
43.74	48.84	44.20	49.24
43.82	48.86	44.32	49.28
43.84	48.92	44.36	49.36
43.92	49.02	44.40	49.40
43.96	49.08	44.46	49.46
44.12	49.10	44.48	49.50

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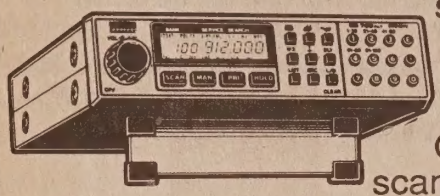

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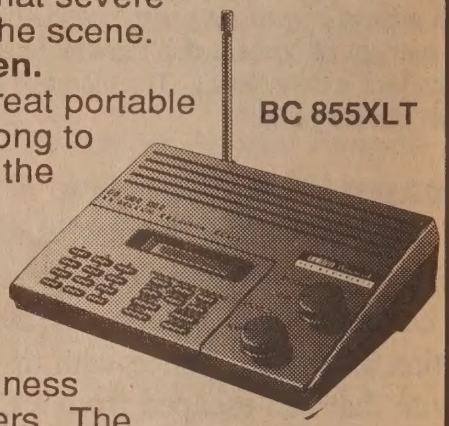

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First Word

I Felt the Earth Move

An Earthquake on Radio by Brian Webb

IN THE PREDAWN hours of Monday, January 17, 1994, southern California was rocked by a major earthquake. In less than a minute, several people were dead, many structures were destroyed, and the daily routine for millions of residents was turned upside down. Here is an account of what happened from the perspective of a radio enthusiast.

Monday, January 17

04:32 – All I know is that I am enjoying a good sleep when I feel a rocking sensation. The quake increases in intensity. The entire house is jolted and shaken. Clearly, we are having a sizable quake. After several seconds, the intensity diminishes. I pull on my sweats and go downstairs.

On TV a man is making a live report from the KNBC newsroom. In the background people shouting. One voice says, "Watch that monitor. It could fall down!" I go back upstairs to put my contacts in. Just as I was placing one of my lenses between my thumb and index finger, we are hit by a strong aftershock. There is a flash of light through the south window and then the power goes out. Using a flashlight, I finish putting in my lenses. I put on my shoes and go out to take a look.

What I find is surprising. The first thing I notice is the darkness and the beauty of the sky. It is still and quiet. There is no wind and the only sound I could hear is the faint beeps and wails from car alarms far off in the distance. The only lights are those of neighbors' flashlights as they mill around in their homes. There is no sense of urgency or fear. All very low key. Beautiful. Peaceful. Unreal.

Next, I plan to check in with the local hams. I retrieve the battery pack and rubber duck antenna for my 2-meter handy talkie from my car. I tune in the Thousand Oaks repeater (146.850 MHz). Other hams seemed to be OK. I comment on the darkness and someone replies that the power grid is knocked out for 75 miles. There is no electricity from Thousand Oaks to Riverside.

I notice that a disaster net is already being set up on the Sulphur Mountain repeater (146.880 MHz). Unfortunately, my location in the Conejo Valley only allows me access to the local repeater. I can hear other repeaters, I just can't reach them from here. I'd have to find a better location.

I drive up to Montclef Ridge which rises hundreds of

I Felt the Earth Move

The quake-displaced Salazar family camping in Balboa Park in Encino

feet. From here I can access 2-meter repeaters in four counties and I have a good view of Ventura County. I call net control and give my location. Someone asked if I could see the fire in Grimes Canyon (several miles to the north). I can not. Switching back to the Thousand Oaks repeater, I hear a report that U.S. Route 101 is closed. I head home.

06:00 – I return to Mountclef Ridge. In the dim light I see a huge smoke cloud silhouetted on the eastern horizon. It appears to be located between eastern Simi Valley and Chatsworth. I contact net control on the Sulphur Mountain repeater and report the smoke. Then I switch over to the Mount Disappointment repeater (147.270 MHz) which serves Los Angeles County. A disaster net is underway. I report the closure of Route 101. I leave for home.

06:40 – The phone rings and slightly startles me. I wonder who would be calling at a time like this. I answer and a woman says something in Spanish. From the sound quality, I figure it's long distance. It turns out to be my wife's family. They heard about the quake and wanted to see if we were alright.

07:45 – Returning to Mountclef Ridge, I now have my scanner and a magmount antenna. I search the 162 to 174 MHz U.S. federal band and notice that the National Weather Service's Los Angeles broadcast on 162.550 MHz has a peculiar tone every three seconds. I surmise that it's some type of an indication that a state of emergency exists. I listen to the entire broadcast and all I hear is weather information; no mention of the earthquake at all. Through the windshield of the car, I see a buff-colored cloud of smoke coming from a canyon northeast of Simi Valley. I think it's a dust cloud from landslides. I spot another buff colored smoke cloud. This one is located in a valley north of Moorpark.

07:55 – My car is rocked by an aftershock.

08:21–08:24 – An audio tone was heard on 165.8125 MHz which warbled from time to time. I realize that I was hearing a transmission from a remote seismometer. Whenever an aftershock occurred, the steady tone would begin to warble. Weird!

08:25 – I depart Mountclef Ridge to buy batteries and gasoline, and to take a look around.

08:40 – Thus far, I have the impression that Thousand Oaks has come throught the earthquake unscathed. When I turn into the Park Oaks shopping center, I am surprised to see stores with their windows boarded up and glass being removed. I pull into U.S.A gas. Well, U.S.A has plenty of gas, but no electricity to pump it.

08:45 – I arrive at North Oaks Plaza and see that Ace Hardware is open. I park and walk into the store. The lights are out and there is a line of people extending back into the darkness. Over in the corner I see a man cleaning up aerosol paint cans from the floor. I ask if he has any batteries and he says "No." Then I decide to check the liquor store at the other end of the plaza. As I walk along the store fronts, I notice numerous small cement fragments. I walk into Noth Oaks Liquor. The aisles are covered with debris. Again, no batteries.

09:07 to 09:14 – On 165.8125 MHz, I monitor and tape record the signal from a seisometer. At 09:10, the steady audio tone begins to warble and a few seconds later the car is jostled. It feels like my car is being moved by the wind. Only thing is, there's no wind.

09:16 – Down in the 2-meter band, I notice that the 146.850 MHz Thousand Oaks repeater is being used by a local disaster net. So much for casual communications.

09:18 – On 169.000 MHz I hear a man in a mobile unit say that he has

I Felt the Earth Move

Soldier Loerch of Bravo Company, 4th Battalion, 160th Infantry Brigade, California National Guard

arrived at the Simi Valley post office and is checking for damage.

09:26 – I monitor a conversation on 409.525 MHz between "Central Control" and a mobile unit. The mobile unit is operated by a man who tells the dispatcher that he doesn't think he can make it to work because the freeway is down.

09:38 – On 42.400 MHz (a CHP Ventura Central frequency) I hear a California Highway Patrol mobile unit say he's going to check Route 23 for damage.

09:44 – There's interesting traffic on 148.150 MHz."Eagle 46" is heard along with references to "Eagle 979," OES (California Office of Emergency Services), and positioning of OES personnel at Whiteman Airport, a small plane airport in the San Fernando Valley, and the Los Alamitos Armed Forces Reserve Center, Orange County, south of Los Angeles. These stations belong to the Civil Air Patrol, an auxillary of the U.S. Air Force.

09:46 to 09:51 – On 148.825 MHz I hear the U.S. Coast Guard Auxillary discussing what to do next and the trembor. One of the stations says that the commanding officer is out on the front lawn preparing hot drinks for the neighbors. The stations then shut down the net. The net consisted of three stations: "Delta Charlie," "Juliet Tango," and "Lima Papa."

09:57 – A strong aftershock. I go back to the seismometer signal on 165.8125 MHz. The audio tone from the seismometer is going wild and then levels off after a couple of minutes.

10:06 – I depart from the ridge and head home.

10:30 to 11:15 – Sleep is difficult because I'm still agitated from the morning's events and the aftershocks keep spooking me.

13:25 to 13:37 – I make a phone call to Karl, N6VNG, a local ham in Camarillo. Karl says that he went to his office in San Fernando Valley that morning and found it trashed. He says that some of the lathes and heavy machinery were walked across the shop floor by the earthquake and that some of his company's building will probably have to be condemned.

13:37 – The lights come on. We have power!

14:20 to 14:25 – I make a quick check of U.S. military satellite frequencies between 248.850 and 269.950 MHz for disaster-related communications. No unencrypted voice is heard.

14:20 – KNX news radio says that there will be a curfew tonight in the San Fernando Valley.

14:57 to 14:58 – Using my scanner, I check several Army, FAA, and FEMA frequencies. I hear nothing.

15:13-15:30 – Once again I scan the VHF and UHF federal frequencies. As before, nothing is received.

15:25 to 15:28 – I scan several state and local goverment frequencies. My monitoring fails to turn up anything.

15:34 – A powerful, long duration aftershock hits. Luckily the power stays on.

15:39 – I telephone service stations to see who has electricty. Rob's Chevron does.

16:44 – A full tank and another aftershock.

17:35 – With my Kenwood R-5000, I search the shortwave spectrum between 4.5 and 7.0 MHz for OES or National Guard radio nets. In short order I find a military net operation on 5126.0 KHz in upper sideband mode.

17:38-18:08 – I monitor 5126.0 KHz for half an hour. To my delight, I determine that I'm hearing a California Army National Guard net that was brought on the air in response to the tremor. Yankee 2 Lima 6, the net control station tells one of the other station that the commanding officer of G-3 and others are pleased at how the net was bought up and maintained. Then net control congratulated all Yankee 2 Lima stations.

At 18:00, Yankee 2 Lima 6 individually called several stations and told each one to secure station. Net control then says"... I appreciate everybody coming on the air. Job well done." Yankee 2 Lima 6 then signs off with "This is Yankee 2 Lima. California State Military Reserve, 20th Communications

Group securing station. Out." A few minutes after the net is secured for the night, India 9 Oscar in Bakersfield comes on the air and has a conversation with Oscar 7 Charlie. The radio operator in Bakersfield says that he has his commanding officer on the telephone and wants to know if there's any traffic for his unit. The other station says there isn't. India 9 Oscar then asks if any units have been mobilized. Oscar 3 Charlie 1, Oscar 3 Charlie 5, Oscar 3, Charlie 12, Yankee 2, Lima 3, Yankee 2, Lima 5, and Yankee 2 Lima 7. References to CECOM and CE detachment were also heard on this net.

19:25 – I head for Mountclef Ridge in an attempt to pass a message to my family via amateur radio and to have a scheduled conversation with N6VNG.

19:25 – Upon arrival on the ridge, I hook up my 30 watt linear amplifier and switch to 145.380 MHz, the frequency of a repeater 45 miles away atop the Palos Verdes Penninsula. Then I put out a call for any station with long distance telephone capability to assist me in passing a message to my family via telephone. KC6MBD in Lawndale answers and asks what I need. I explain that the telephone company has limited our service to local calls and that I'm unable to contact my family in the Palm Springs area (145 miles east) and that I would like for somebody to call them collect to tell them I'm all right. KC6MDB agrees to help and I give him a number. He tells me to standby. About 90 seconds later he tells me that he has my brother-in-law Jack (a former ham) on the line. We try a primitive phone patch arrangement of holding the telephone near the radio. Jack can hear me, but I barely hear him. KC6MDB then serves as an intermediary and passes the traffic back and forth. We conclude the call and I give KC6MDB a sincere thanks for his help.

19:50 – I change frequencies to 146.520 MHz, the national 2-meter simplex calling frequency, and call

I Felt the Earth Move

KGO-TV mobile earth satellite station in Reseda Park

for Karl. He doesn't respond (I'm 10 minutes early), but a local ham calls me and asks for a radio check. We end up having a 12 minute conversation.

20:02-20:15 – Karl and I establish contact on 146.520 MHz and discuss the day's events.

20:21 – Depart the ridge for home.

22:30 – As an experiment, I place a microphone three inches outside of the north window of my radio room and connect it to my TR-67 sound activated recorder. I've noticed that the window paines rattle loudly during aftershocks and I think it would be an interesting experiment to record them. Once everything is hooked up, I set the recorder for high sensitivity sound activation and quietly walk away.

Tuesday, January 18

After being awake 20 hours, I fall asleep. As tired as I am, my sleep isn't very sound. Every time there's an aftershock, I wake up and adrenalin flows. Eventually I relax and fall asleep only to be awaken by another aftershock.

07:24 – A quick check of my audio recorder confirms that the tremor was captured on tape.

08:18 – I use the 146.850 MHz Thousands Oaks repeater to ask about road closures and if the Simi Valley Freeway is open. Bob, K6IEC, informs me that it is.

08:36 – While driving east on the Freeway, I see small ridges cutting across the road; the tremor apparently compressed the freeway and forced the pavement upwards. I wonder if this highway is really safe.

08:43 – I enter the extreme northwest corner of the San Fernando Valley and exit on Topanga Canyon Boulevard. I look for damage and stop a few times to take photos. So far the damage that's visible from the street consists of broken windows, missing roof tiles, thin cracks in the

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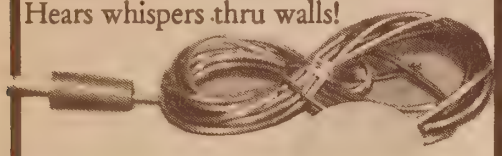

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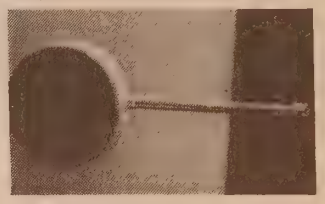

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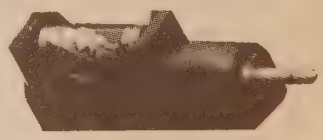

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I Felt the Earth Move

exteriors of buildings, and hanging ceilings that have partially fallen down.

09:21 – I stop the car and walk over to a small cluster of cars and campers. There are several Mexican or Central Americans standing and sitting around. I approach them and in Spanish ask them if they're living outdoors because of the earthquake. They answer "Si" in unison. After asking for permission I take two photos of the impromptu camp. Then I enter Northridge.

09:25 – The first thing that I notice are all of the oranges on the ground, literally shaken off the trees. I walk over to what used to be a multi-level parking structure. Now it's a collection of concrete pillars. A sign reads "Do Not Enter." Don't worry, I won't. I'm joined by several Los Angeles Police officers. They're carrying cameras and sightseeing. I spot several mobile satellite stations in a parking lot. I cross over the yellow tape and try to walk over to them undetected. Suddenly, a security guard whistles at me. I try to bluff my way in. but he doesn't buy it. Undaunted, I jaywalk across Nordhoff Street to survey a large shopping center one block south of Fashion Center. I'm able to walk through the area unchallenged. Several National Guardsmen are in the area protecting against looters. I ask if they've been busy. One of them says that earthquake duty is boring. At least during the 1992 riots he had looters to chase.

I walk to the eastern side of Northridge Fashion to view what used to be Bullock's Department store. Sure enough, there's a massive hole in the side of the mall. I walk to the entrance to the parking lot and ask a security guard if I can walk across the lot for a closer shot. I encounter another group of Guardsmen. One guard's radio interests me so I stand nearby and study it. I notice that the handheld has the letters "LAPD" cast into the case. Then I hear a station ID of "KJC625" come from the HT. He's definately on an LAPD frequency. Quite interesting.

Continuing south, I come to a railroad crossing. People are standing around looking at something down the tracks. I ask a bystander what's going on and he explains that a train was knocked off of the tracks by the earthquake. Further on, in the parking lot I see humvees and 2½ ton trucks. Knowing a good photo opportunity when I see it, I head towards the vehicles. A sergeant allows me to stick my head inside for a look. I notice a large, box-shaped radio between the two seats. According to the sergeant, it's an old vacuum tube, crystal-controlled set, but it still works. The frequencies are written on small, white spaces on the front of the transceiver. I try to sneak a look at the frequencies, but I can't get close enough. I ask the sergeant if the National Guard's radio equipment is all hand-me-down from the regular Army. He says that used to be true, but now the Guard is starting to receive newer equipment.

11:45 – I return to my car and end my foot reconnaissance. Then I take advantage of my position near the Fashion Center, a focus of much of the quake-related activity, and search the VHF and UHF bands for interesting signals.

11:52 – I scan numerous military and federal frequencies, but virtually nothing is received.

11:59 – Searching between 118 and 124 MHz, I try to hear the helicopters hoovering overhead.

12:11 – On 122.350 MHz, an aircraft asks about flight restrictions. A ground station replies that the only restrictions in effect is within one mile of Northridge Fashion Center.

12:19-12:32 – Relief communication are heard on the 147.705 MHz Oat Mountain repeater. I disconnect my scanner, hook up my 2-meter HT, and transmit a request for a radio check. I'm immediatly informed that a Red Cross net is in operation and chased off fo the repeater.

12:27 – Disaster traffic is monitored on the 147.270 MHz Mount Disappointment repeater.

12:33 to 12:45 – The 505 to 512 MHz region is searched for LAPD communications related to the quake. The LAPD is heard on two frequencies, but none of the traffic is related to the tembor.

12:47 – I leave the Northridge Fashion Center for home.

18:00-18:10 – Military and federal frequencies are once again searched for disaster traffic. Little of interst is monitored.

21:10 to 21:33 – Police, sheriff, and fire mutual aid frequencies sre scanned for quake-related communication. Several frequencies are active, but only 506.7125 MHz has any traffic of interest.

21:30-22:33 – The Valley Bureau (San Fernando Valley) of the LAPD is monitored on 506.7125MHz. The frequency is much quieter than normal. The only crime calls I hear are for a burglary and a man trying to start fights at a newsstand.

21:39 – The dispacher relays a message to valley units that curfew begins at 23:00. A mobile unit is heard at 22:16 requesting national guard personal for crowd control. At 22:18 the dispacther reads off the names of courthouses that will be closed tomorrow.

The earthquake and aftermath have been an experience that I'll never forget. Along with enduring the tremors and witnessing its effects, I intercepted a wide range of interesting radio traffic. Additionally, radio allowed me to contribute in my own small way to the response and provided me with a backup means of communication.

Union City
The Town that Crosses the Line

Union City, Indiana (left) police and fire chiefs and Union City, Ohio police and fire chiefs on the state line.

By Norm Schrein

UNION CITY is a small mid-west town. In fact, it has a population of less than 5,000. Yet, this city has an over abundance of public safety services available to its citizens.

The police service has five cruisers, ten full time police officers, and nine auxiliary police officers alone. The fire departments' roster of equipment looks like a list for a city many times larger. Fire fighters have the use of three engines, four pumpers (including one rescue pumper), one tanker, two utility vehicles, one "haz mat" unit, four ambulances, two command units as well as one snow mobile and a rescue sled. All this equipment is housed in three stations. The town also has the services of over ninety fire and EMS personnel.

If you think this large amount of equipment is out of proportion to the small population, you would be correct -- in most situations. However, there are a few other facts to be considered in Union City.

This town has two police chiefs, two fire chiefs, two police and fire departments, two city maintenance organizations, two telephone companies, and two power companies. The folks on the east side of town have the advantage of using a 9-1-1 telephone system while those on the west side of town do not. And half the year, there is a one hour's difference in time from the east side of town to the west. Union City, you see, is on the state line between Ohio and Indiana! If you think this can cause some jurisdictional problems, you're correct.

Union City (Indiana) police chief Monte Poling said "There have always been jurisdictional problems in Union City, but we have made some mutual aid agreements to help alleviate the situation". Some of these mutual aid agreements have the Indiana police officers sworn in as Ohio officers and vice versa.

However, even with the mutual aid agreements, not every situation can be covered. Some years ago, a fight began at a bar

on State Line Street. The bar is in Ohio and the state line runs down the center of the street. In the course of the fight, the combatants ended up outside the bar and on both sides of State Line Street. "At times they were fighting in the middle of the street", Chief Poling said. Eventually one man was arrested, but he contested the arrest in court saying he was arrested in Ohio by an Indiana Officer and cited into an Indiana Court for an offense that was committed in Ohio. "The court had to throw the case out", the chief said, "because there was a real doubt as to where the arrest was actually made. "After all, an officer is not going to pay attention as to exactly where he is standing in the middle of trying to break up a fight", Poling said.

The police chief of Union City (Ohio) is Harold Schafer. Chief Schafer also recognizes the jurisdictional problems that both police departments face. One problem can be in serving misdemeanor warrants. "You can watch the guy go up and down the street and not be able to touch him because he is in Indiana", the chief said. The usual tactic is to call the police officers from the other side of the line and have them come into the area. "Since these guys have been in trouble with both agencies, they are not sure who is looking for them and they simply walk across the street back into Ohio. Then we get them", the Chief said. The police officers can not physically move the person across the state line. However, they can use psychological tactics that cause the person to cross the line on his own.

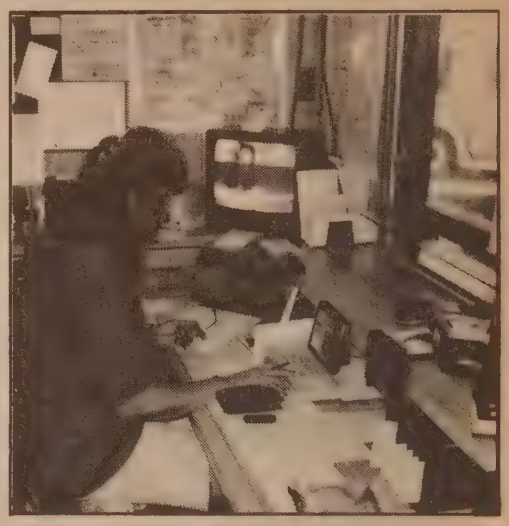
The fire and medical services operate in much the same way as the police agencies do with mutual aid agreements. In fact, the Union City (Ohio) Fire Department provides fire service to a couple of nearby townships in Indiana.

The fire chief of the Ohio side is Carl Wright. Chief Wright is no newcomer to fire fighting as he has been a fireman with the Union City Fire Department since 1942 and chief since 1954. Wright's counterpart in Indiana is Bill "Billy Bob" Mangas. Bill became interested in a fire fighting career as an Explorer Scout in 1978. In 1982, he became a volunteer and, in 1987 he was appointed to a full time position with the fire department. Finally in 1992 he became chief.

Chief Mangas and Chief Wright come from different ends of the spectrum. Although Chief Wright has plenty of education in fire fighting, the majority of his experience has come first hand. Chief Mangas, although he started out as an Explorer Scout, went to school for a formal degree in Fire Sciences at Louisiana State.

Major structural fires are not a common thing in this small community. In fact Chief Wright had to think back to the 1950's to remember a major fire that involved mutual aid above and beyond the two Union City Fire Departments. But don't let that fact lead you astray. There is plenty of fire activity in Union City. Last year, the Indiana department handled over 1,000 calls. That is just over three dispatches per day. Then, there are the calls dispatched on the Ohio side.

Union City's public safety services provide a contrast of jurisdictional problems and cooperation. Union City is remote enough to be a fifteen minute emergency drive from other communities having additional public safety units. Therefore, the personnel of the Union City (both Indiana and Ohio) public safety organizations have to handle any major situation on their own. Their cooperation has worked for many years on this city that is divided by political boundaries,



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The Air Boss Platform at the Show

A Day at the AIR SHOW

by Wayne Heinen

Combining scanning and an active family can sometimes be a challenge for serious scanner listeners. One event that can accomplish this task very easily is attending an Air Show. No one, wives, girlfriends or kids can resist the fun and excitement of the performances.

There are a variety of air shows throughout the USA and Canada during the spring, summer and fall. The shows fall into two main categories.

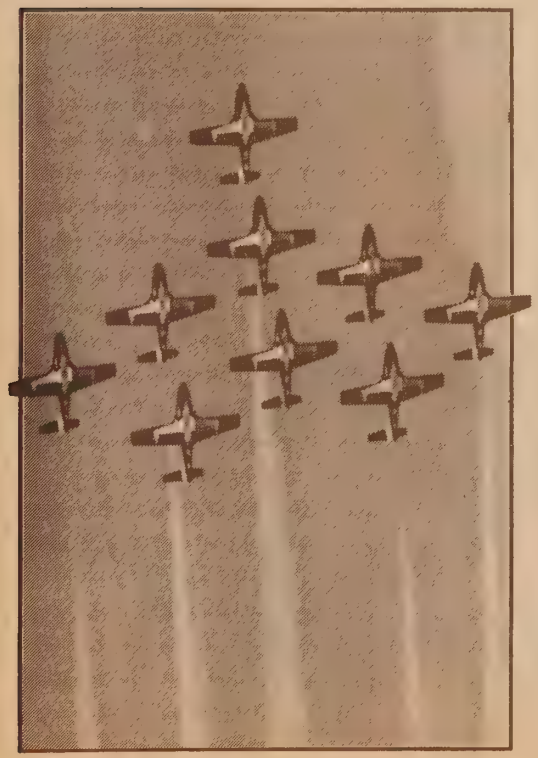
First, is the commercial air show. These are generally scheduled at general aviation airports, where closing the airport will not disrupt commercial traffic. These shows will usually charge a modest admission ($8.00 to $12.00) for the day's activities. Most air shows will feature stunt fliers, precision fliers and a variety of ground displays. At larger shows there will typically be one military precision flying group and one military "demonstration". Occasionally, fly byes of unusual aircraft are scheduled. Currently the F-117A Stealth fighter and the B-2 Stealth bomber are in big demand.

The second type of show is a Military Appreciation show. These shows are dominated by military aircraft. There will usually be a military precision flying team and numerous military aircraft as "static" ground displays and fly bys of the more unusual "Stealth" craft. Many will feature parachutists and soldiers repelling from helicopters. Ground operations such as loading bombs into aircraft and medical evacuation demonstrations are also likely. One nice thing about a military show is that they invariably are free to the public!

One item that is generally handy to obtain is the program booklet for the show. Sometimes they're free but in no instance

A Day at the Air Show

Gene Soucy, above, with wing walker Teresa Stokes. Below, All nine of the Canadian Snowbirds in formation.



have I seen one costing more than $5.00. These will usually contain a layout of the show grounds showing locations of static displays, vendors, and the all important Port-a-Lets. This will allow you to determine where "Show Center" is located. This is the center line, usually located directly in front of the "Air Boss" pavilion or platform. Almost all of the acts and stunt routines are performed at this focal point. It is best to get set up as close as you can to show center.

Attending an air show involves some preparation in addition to your scanner. For most shows you will want to bring some "creature comforts" with you. If you like sitting, bring some lawn chairs! Some shows will provide seating, but this will be at an additional cost. I've seen it run as high as $10 per person. We always bring our own chairs and a cooler with lunch and as many soft drinks as we can carry. Vendors typically can ruin an otherwise nice outing by the quality and prices of the food and drink. Check first with the event organizers to see what's permissible. Usually, a cooler with soft drinks and food is OK. Generally beer and alcoholic beverages are not allowed.

Since shade is always at a premium, remember to bring a hat or visor and your sun screen. You'll want your camera and plenty of film. For your scanner, a set of head phones is almost a necessity. When the jets are that close the noise will drown out the audio of just about any scanner speaker. Depending on the time of year, make sure you have jackets or some form of weather protection. Remember that air shows are totally outdoor events with little in the way of available shelter. Last, bring some extra money for the inevitable souvenirs that you may wish to purchase. If you're well prepared for the day, nothing will deter you from enjoying the event.

Your scanner will not only be fun as usual but, it can supply you with valuable information as to the progression of the days program and changes that may occur. Air shows are controlled by an "Air Boss". The Air Boss is responsible for all activity on the ground and in the air. All clearances for take offs and landings, as well as when an act is to begin and end. The Air Boss frequency is the first you'll need to find. At most shows I've attended it is relatively easy, they usually will use the normal tower frequency or the towers secondary operating frequency. These can generally be obtained from local or regional scanner guides. On the rare occasion where another frequency is used, you may need to scan the appropriate bands to find it.

If you are attending a military show at a military base your best bet is to make sure your scanner will pick up the military UHF AM aircraft band. Generally, the Air Boss will be using the base's tower frequency. The same thing applies if they're not, put your scanner in scan mode and search for the frequency in use. Once you've found the Air Boss your pretty much in good shape.

Most civilian acts will be operating on the same channel as the Air Boss. I've been to numerous shows where the scanning was done once the Air Boss frequency was located. Put the scanner on manual and enjoy the show. However, much more can

A Day at the Air Show

be heard especially when you attend an event featuring the Blue Angels or Thunderbirds. Their frequencies are shown in the side bar. Once again you'll need a scanner that has more features than most in order to hear some of the action.

The last show I attended with the Thunderbirds found them using 148.00 MHz AM mode. This type of odd frequency can only be loaded into a scanner that allows you to select the receiving mode. The best thing about being able to scan the aircraft themselves is the advance warning that you have to portions of the act. Both the Blue Angels and Thunderbirds have a segment of their act where the entire audience is focused on four aircraft over show center, all of a sudden a low flying aircraft comes screaming over the crowd from behind! Sneak Attack! It has startled many a newcomer to air shows.

Stunt flyers are the daredevils. Most fly custom built bi-planes with powerful engines that allow them to maneuver their craft in ways that look almost impossible. Flying upside down, doing huge loops and sometimes bringing their aircraft to a dead stall. If your lucky, one of the few active wing-walking acts will be on the program. Something that I have watched but have no desire to try.

One thing that your scanner can help with is arriving and leaving the show. By monitoring the police and fire in the area where the show is being held you'll have a better idea of which access route to avoid. Many shows, especially the free ones, can attract huge crowds. Traffic problems are common place when the show

Reported frequencies for USAF Thunderbirds

Freq	Operation	Mode
120.450	Reported Operations	AM
140.000	Air to Air Tactical	AM
141.850	Air to Air Primary	AM
143.850	Air to Air Primary	AM
236.550	Air to Air Solos 5-6	AM
236.600	Air to Air	AM
413.025	Ground Support	FM
413.100	Ground Support	FM
413.075	Ground Support	FM
413.150	Ground Support	FM
413.275	Ground Support	FM
413.350	Ground Support	FM
413.400	Ground Support	FM

Reported frequencies for the USN Blue Angels

121.900	Ground Support	FM
142.000	Air to Air primary	AM
142.025	Ground Support (rpt out)	FM
142.625	Ground Support (rpt in)	FM
143.000	USN Blue Angels	AM
143.600	USN Blue Angels	AM
241.400	Air to Air	AM
250.800	Air to Air	AM
251.600	Air to Air Solo's 5-6	AM
275.350	Air to Air Aircraft 1-4	AM
360.400	Air to Air	AM
384.400	Air to Air	AM
391.900	Air to Air	AM
395.900	Air to Air	AM

Frequency Ranges to search for air show security

151.625 to 151.200
461.000 to 462.200
463.200 to 465.000
467.750 to 467.925

Itinerant "Color Coded" Frequencies

Channel	Frequency
Red	151.625
Blue	154.570
Green	154.600
Brown	464.500
Yellow	464.550

ends. The end of the show is the best time for seeing and photographing static displays. While everyone else is in a mad dash for the parking lot, you'll have many craft available to view. In some instances the performers themselves will be standing by their aircraft after they have completed their performance, waiting to autograph the air show's program!

While attending the show you may wish to tune in on the ground operations. Show security and crowd control can be interesting sidelights at any event. At military shows, the normal frequencies for the base security are mainly used. You can consult many of the military frequency lists for base frequencies. Civilian shows are a little harder but for most I've found that searching the itinerant (See side bar) frequencies usually will yield a frequency or two.

If you're looking for an outing that the entire family can enjoy, an air show might be right up your alley. With careful preparation you and yours can enjoy a wonderful day outdoor observing some of the marvels of modern aviation and communication.

PHOTOGRAPHY BY JOAN HEINEN

THUNDERBIRDS 1994 SCHEDULE

April	
9-10	Wilmington, NC
16	Tyndall AFB, FL
17	Barksdale AFB, LA
23-24	NAS Norfolk, VA
30	Shaw AFB, SC
May	
1	McEntire ANGB, SC
7-8	Dover AFB, DE
14-15	NAS Lemoore, CA
21	Kelly AFB, TX
22	Goodfellow AFB, TX
28-29	Avoca, PA
June	
1	USAF Academy, CO
5	Myrtle Beach, SC
11-12	NAS South Weymouth, MA
18-19	NAS Willow Grove, PA
25-26	Redding, CA
July	
2	K.I. Sawyer AFB, MI
4	Battle Creek, MI
16-17	Portland, OR
23-24	Dayton, OH
27	F.E. Warren AFB, WY
30-31	Broomfield, CO
August	
6	Elmendorf AFB, AK
10	Misawa, JAPAN
13	Osan AB, ROK
14	Kadena AB, Japan
18	Thailand
20	Malaysia
23	Singapore
27	NAS Barbers Point, HI
September	
3-4	Latrobe, PA
10-11	Scotia, NY
17	Sheppard AFB, TX
18	Laughlin AFB, TX
24-25	Bowling Green, KY
October	
1-2	Muskogee, OK
8	Travis AFB, CA
9	Castle AFB, CA
15-16	Houston, TX
22-23	Robins AFB, GA
29-30	Sanford, FL
November	
5-6	Glendale, AZ
12-13	Lake Charles, LA
20	Nellis AFB, NV

BLUE ANGELS 1994 SCHEDULE

April	
9-10	Punta Gorda, FL
16	Luke AFB, AZ
23-24	MCAS Beaufort, SC
29-30	MCAS El Toro, CA
May	
1	MCAS El Toro, CA
7-8	Redmond, OR
14-15	NAS Corpus Christi, TX
20-21	Andres AFB, MD
23-25	USNA, MD
28-29	Chattanooga, TN
June	
4-5	Huntington, WV
11-12	Selfridge ANGB, MI
18-19	McConnell AFB, KS
25-26	Davenport, IA
July	
2-3	Traverse City, MI
9-10	Eau Claire, WI
16	Pensacola Beach, FL
23-24	Minot, ND
30-31	Springfield, IL
August	
6-7	Seattle, WA
13-14	Abbottsford, BC Canada
19-21	Miramar, CA
27-28	Chicago, IL
September	
3-5	Cleveland, OH
10-11	NAS Memphis, TN
17-18	Burlington, VT
24-25	NAS Jacksonville, FL
October	
1-2	McGuire AFB, NJ
8-9	San Francisco, CA
15-16	Salinas, CA
22-23	Ft. Worth, TX
29-30	NAS New Orleans, LA
November	
5-6	Maimi, FL
11-12	NAS Pensacola, FL

GOLDEN KNIGHTS 1994

April	
9-10	Punta Gorda, FL
9-10	Wilmington, NC
16	Tyndall AFB, FL
17	Barksdale AFB, FL
23	Pope AFB, NC
23	MCAS New River, NC
30	Shaw AFB, SC
30-31	Hammond, LA
May	
1	Hammomd, LA
1	Eastover, SC
7-8	Daytona, FL
7-8	Dover AFB, DE
14-15	Beale AFB, CA
20-21	Andrews AFB, MD
20-22	Washington, DC
21	San Antonio, TX
27	Georgetown, MD
28-29	Columbia, MO
28-29	Avoca, PA
30	Andover, MD
June	
2-3	Atlantic City, NJ
3-5	Elkhart, IN
4-5	Hamilton, OH
11-12	So. Weymouth, MA
11-12	Ukiah, CA
18	Sterling, CO
25-26	Williamsport, PA
25-26	Concord, NH
28	Fort Stewart, GA
July	
2-3	Elmira, NY
2-4	Brroklyn, NY
4	Fort Bragg, NC
9-10	Dekalb, Il
9-10	Eau Claire, WI
16-17	Muskegon, MI
16-17	Oklahoma City, OK
-23-24	Dayton, OH
23-24	West Chicago, IL
29-31	Sioux City, IA
30-31	Broomfiled, CO
August	
6	Langley AFB
6-7	Beaver, WV
13-14	Alexandria, VA
13-14	Otis ANGB, MA
20-21	Lethbridge, Canada
20-21	Van Nuys, CA
22-25	Gray, TN
27	Cannon AFB, NM
27-28	Westover, MA
September	
3-4	Latrobe, PA
3-5	Cleveland, OH
10-11	NAS Memphis, TN
10-11	Peoria, IL
13	Fayetteville, NC
17-18	Manassas, VA
17-18	Burlington, VT
24-25	Bowling Green, KY
24-25	Pasco, WV

Ask The Experts

Q: I'm getting interference on the 154 MHz band of my PRO-2006. It sounds like a paging station. What can I do to improve reception?
-- Bruce Reed
Salem, Massachusetts

A: As a quick fix, try using the attenuator switch on the '2006's rear panel. This will work, but has a tendency to cut out lower powered or distant transmissions. Another possibility is raising the squelch control just high enough to eliminate the interference.

Q: Are there any uses for an old crystal controlled scanner, or should I sell it or toss it?
-- John Hackworth
Petaluma, California

A: Keep it, John! Crystal controlled scanners are passe, but they make great backups, or secondary scanners to keep track of common frequencies while your main scanner is hunting for new channels. You just never know when a second unit might come in handy, so I wouldn't recommend giving it up.

Q: What channel spacing is used on the 800 MHz band?
-- Barbara Kennedy
Vienna, Virginia

A: The most commonly used spacing is 12.5 kHz, the only exception being the 30 kHz spacing seen in the cellular mobile telephone portions of the band.

Q: Can I stack two scanners

atop each other or will they interfere?
-- Barry Melrose
Stanton, South Carolina

A: Stacking scanners is done all the time and shouldn't cause a problem. Just be sure not to block the air vents or tangle the antenna and power cords. If one of the scanners starts locking up on odd frequencies or dead carriers, move them apart to determine if they're causing each other grief.

Q: I've heard that adding adapters causes signal loss. True or false?
-- Patrick O'Shaughnessy
Silver City, New Mexico

A: True. Each time you add an adapter in-line, you're reducing the "straight shot" from antenna to scanner. Try to use as few adapters as possible. Consider buying coaxial cable with the correct adapters already fitted. It's worth it!

Q: I have two questions for you:
1. What is on 800 MHz besides police and car phones?
2. What is on 900 MHz particurly between 900 and 912 MHz?
--Robert Schultz
Winona, Minnesota

A: Both the 800 and 900 MHz band have plenty of information besides police and fire. The 800 MHz band also contains Specialized Moble Radio Service, which is much like a business radio system that can include telephone conversations. These are trunked and non-trunked systems.

The 900 MHz band contains trunked and non-trunked business radio systems as well as studio to transmitter links (from radio broadcasters), railroad and paging frequencies.

Q: I was wondering if you know of any way to modify the Realistic PRO 2024 to pick up the 800 frequencies.
--Matt Richard
Livonia, Michigan

A: Currently we know of no modifications to the Realistic PRO 2024 to include the 800 MHz band, other than adding an 800 MHz converter.

Q: I got a Bearcat 855XLT fifty channel scanner. My problem is that channels 1 through 10 and channels 30 through 39 are locked out and will not show up on my scanner. For example: when it reaches 50 it jumps to 11 and when it reaches 29 it jumps to

Ask The Experts

#41.
--Charles P. Ford
Bradenton, Florida

A: Your scanner does have fifty channels but they are set up in banks. There should be five of ten channels each. Check the top of your display and you will see a notation as to which bank is on.

In order to turn of a bank, place the scanner in the scan mode and press the number from the keyboard that corresponds to the bank you wish to turn on. Since you probably want to restore bank one (channels one through 10) back in the scan. If you wish to turn off the bank, you can accomplish that in the same way -- putting the scanner in the scan mode and pressing the number of the bank you wish to have turned off.

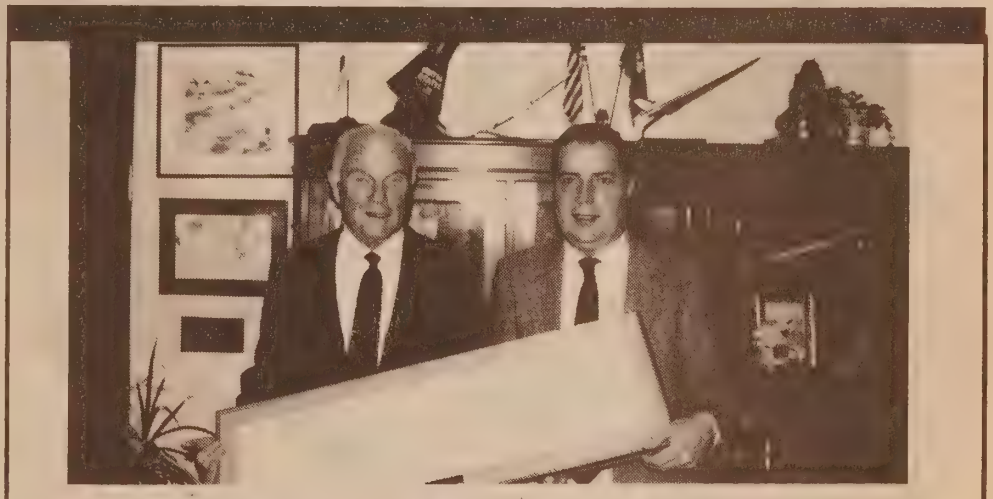
Q: I have Realistic Pro-39 and PRO-42 handheld scanners which I use to monitor police, emergency services, aviation, marine traffic in the Mississippi River area. Would these be of any use in France?
--Robert D. Landry
Port Allen, Louisiana

A: Yes, your scanner can hear the majority of radio frequencies used in France, although the various services will be in different locations of the frequency spectrum. For example you may find police and fire operations in the 160 MHz band. It will require a lot of searching to zero in on a specific police or fire department without a frequency list. Also you will need to understand French as transmissions are in that language. The directory *Monitor the World* contains frequencies for France and other European, countries as well as Asia and South America. Get it from DX Radio Supply, Box 360 Wagontown, PA 19376 for $24.95 plus $4 UPS.

Send your questions to

Ask the Experts

Box 360, Wagontown, PA 19376



Bearcat Radio Club's 1994 Show Schedule

April 29-May 1--Dayton Hamvention, Dayton, OH (Harah Convention Ctr.)
May 20-22--Rochester Hamfest, Rochester, NY (The Dome)
June 10-11--ARRL National Convention, Arlington,TX (Arlington Convention)
June 17-18--Albany Hamfest, Albany, GA (Albany Convention Center)
June--Summer CES Show, Chicago, IL (McCormick Place)
July--Indianapolis Hamfest, Indianapolis, IN (Marion County Fairgrounds)
July--Atlanta Hamfest, Atlanta, GA (Atlanta International Convention Center)
August--Huntsville Hamfest, Huntsville, AL (Von Braun Civic Center)
August 26-28--SW Div. Convention, San Diego, CA (Town & Country Hotel)
September 17-18--Peoria Hamfest, Peoria, IL (Peoria Fairgrounds)
September 17-18--Virginia Beach Hamfest & Computer Fair, Virginia Beach, VA (The Pavillion)
October 1-2--New England Div. Convention, Boxborough, MA (Hilton Hotel)
October 1-2--Louisville Hamfest, Louisville, KY (Louisville Convention Ctr.)
November 4-6--Houston, TX (Adam's Mark Hotel)
November 19-20--Fort Wayne Hamfest, Fort Wayne, IN (Fort Wayne Convention Center)
November--Flordia State Convention, Tampa FL (Florida State Fairgrounds)
January 1995--Las Vegas Winter CES, Las Vegas, NV (Convention Center)

Don't Miss This One Take your scanner to these radio shows and scan this frequency: 145.380 MHz. The Bearcat Radio Club will have a two meter amateur repeater for hams to use. The repeater will be located at the site of the show and should be heard for miles around.

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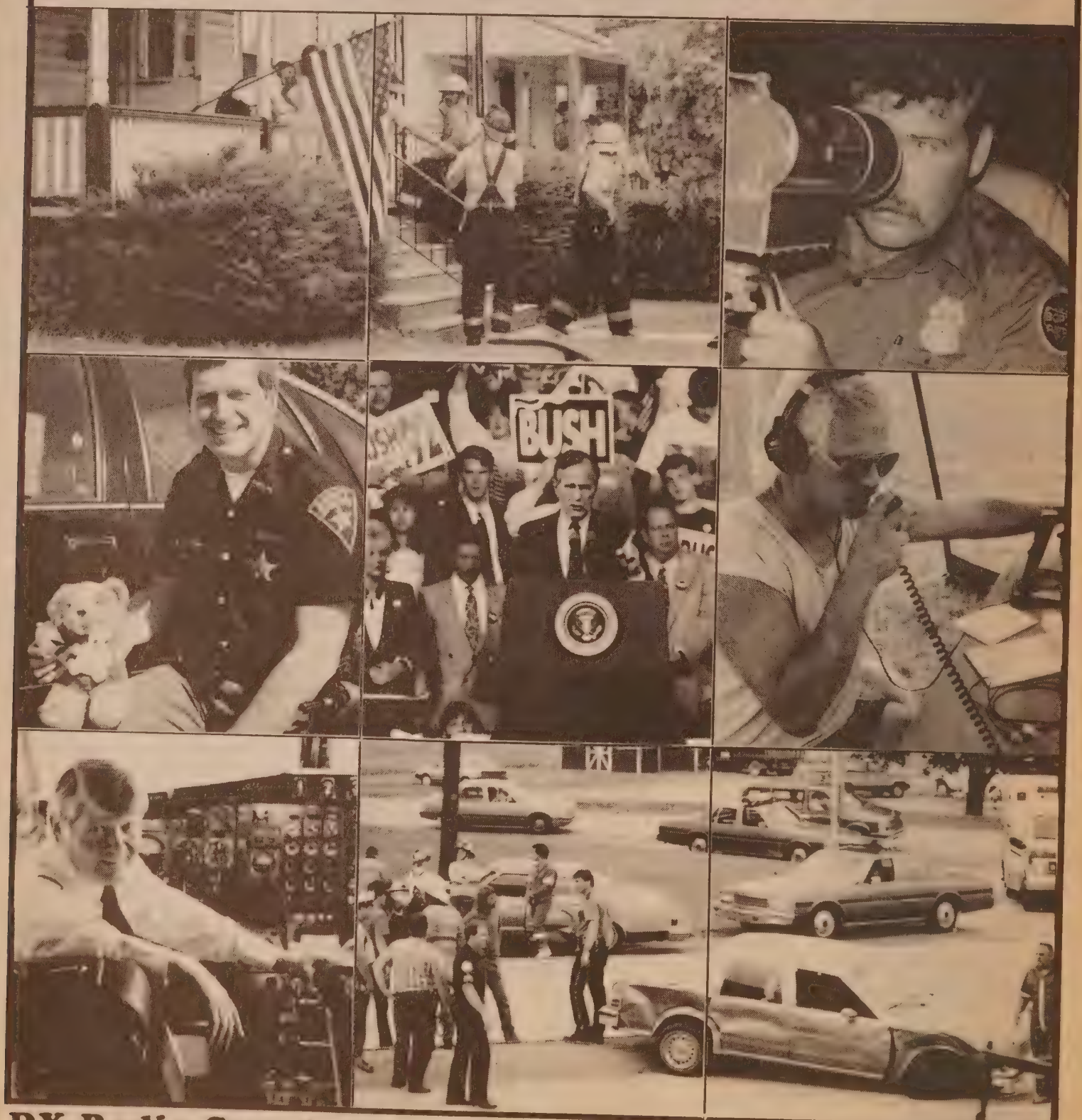
Scanner Guide



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☐ **Betty Bearcat National Police Directory** (Schrein). National police frequency directory. $14.95 plus 4.25 UPS.

☐ **CB Radio Hacker's Guide: AM - SSB - Peaking - Tweaking & Modification.** $19.95 plus 4.00 UPS

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☐ **Fire Call** (Swisher) Guide to monitoring fire radio including basic communications, finding frequencies, fire apparatus, glossary, more. $19.95 plus 4.00 UPS

☐ **Les Mattson's Dictionary of Scanner Terms, Slang and Abbreviatins** Scanner jargon explained. Covers police, fire, EMS, Fed terms. $14.95 plus 4 UPS

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☐ **Top Secret Registry of US Government Radio Frequencies,** 8th edition (Kneitel) The book the U.S. government doesn't want you to see. Frequencies for 80 federal agecies from the FBI to the CIA to the White House. $21.95 plus 4.00 UPS

☐ **Tune in on Telephone Calls** (Kneitel) 160-page book shows you how to monitor telephone calls from homes, cars, ships, aircraft, offices, even trains, on your scanner. $12.95 plus 4.00 UPS

☐ **Warship Directory** (Pogue) Ship list, cal signs, bases, addresses for vessels from the U.S., Canada and Great Britain. $14.95 plus 4.00 UPS

☐ **Weather Radio** (Curtis). The complete guide to monitoring the weather via radio. Weather stations on your scanner, frequencies, more. $14.95 plus 4.00 UPS

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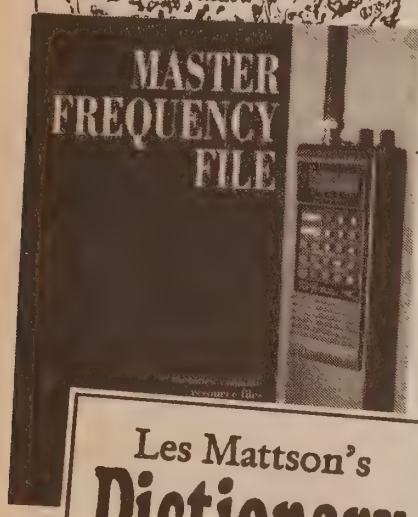

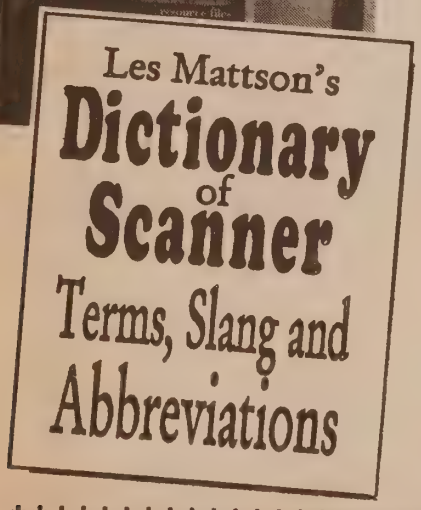

Tune In On Telephone Calls, 2nd edition. People will talk about almost anything on the phone and not have the foggiest notion that others can listen in! All it takes is a scanner and an antenna. You don't need any fancy equipment or expertise to hear calls from homes, cars*, ships, aircraft, offices even trains. This incredible 160 page book gives you all the frequencies and tell you how. $12.95 plus $4 UPS. *Not every scanner can receive cellular phone calls.

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1994 Police Call, A must-have directory of cops, fire, EMS, more arranged by state and community. By frequency list, too. Inexpensive, $9.95 plus $4.

Les Mattson's Dictionary of Scanner Terms. No, this isn't a frequency directory. It's a dictionary style handbook of jargon in various areas of radio use. Understand what you're hearing! $14.95 plus $4.

****

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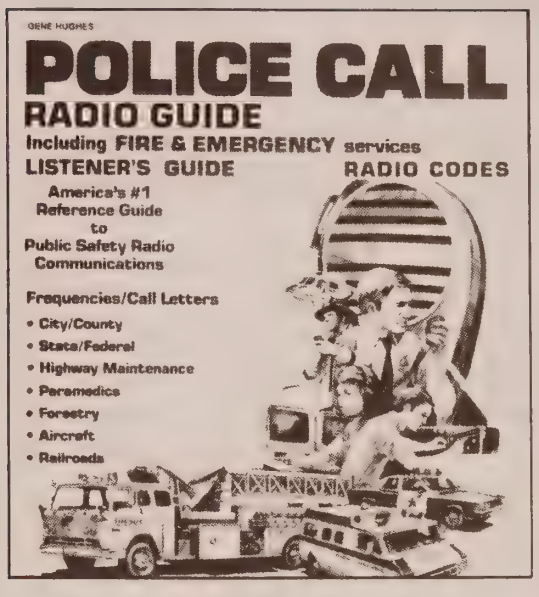


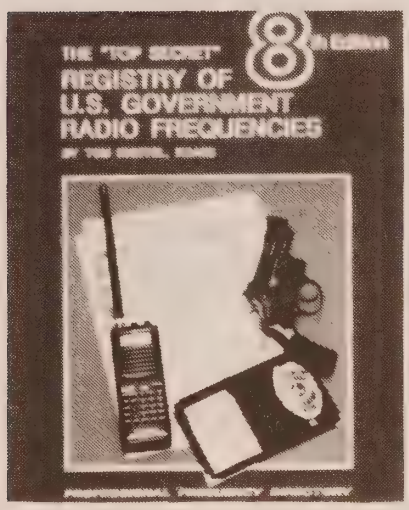
1994 Police Call

Gene Hughes

Listen to what people are saying:

"Thanks for the perfect radio guide."
"...the best I have ever come across in ten years of scanning."
"I've looked at others, but Police Call is by far the best!"

Police Call has become the standard reference for the scanner listener, providing comprehensive frequency and location information in a regional format. Packed with listings for police, EMS, aero, highway patrol, search & rescue, fire, military, constables, sheriff, hospitals, harbors, rail. Order your copy now and have it FAST! Specify state or we'll assume it's for your address. Payment will be posted when received. $9.95 plus $4.00 UPS or 2.00 postal service book rate.



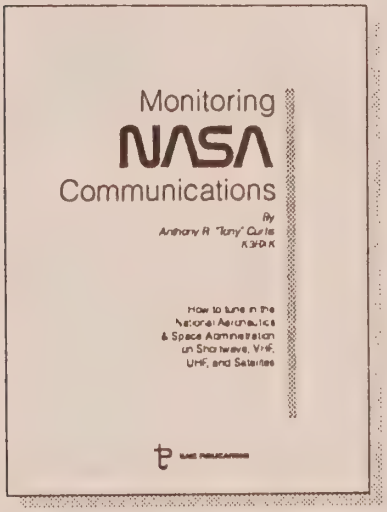
Top Secret!

Registry of U.S. Government Radio Frequencies

Tom Kneitel, K2AES (New, 8th Edition)

The book the U.S. government doesn't want you to see! The largest collection of federal frequency information ever assembled in a single book. Shows you how to use your scanner to hear: *FBI *DEA *Customs *ATF *Secret Service *FCC *IRS *CIA *Immigration *Border Patrol *U.S. Marshal *Federal Prisons *Treasury *GSA *FAA *U.S. Attorney *Postal Service * State Department *National Parks & Forests *Federal Emergency Masnagement Agency *Justice Department *White House *EPA *NSA *ICC *Dept. of Transportation *U.S. Army *Air Force *Navy *Marine Corps *Plus 50 other federal agencies that use scannerband frequencies.

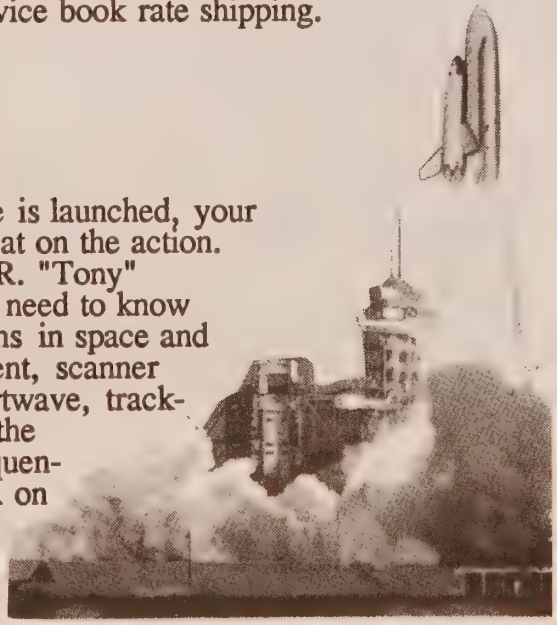
It's the book that made news and shook up Washington. Now you can keep an ear on Big Brother. 268 pages of information. $21.95 plus 3.75 UPS or 2.50 postal service book rate shipping.

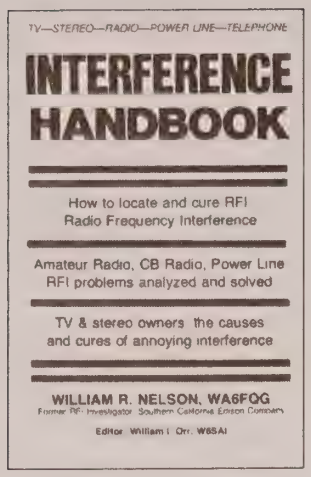


Monitoring NASA

Anthony R. "Tony" Curtis, K3RXK

The next time the Space Shuttle is launched, your radio can give you a front-row seat on the action. Veteran radio hobbyist Anthony R. "Tony" Curtis shows you everything you need to know to monitor NASA Communications in space and on the ground, including equipment, scanner frequencies, rebroadcasts on shortwave, tracking and relay data satellites, and the world's largest list of NASA frequencies. Now you can tune in NASA on scanner, shortwave and satellites. $14.95 plus 3.75 UPS or 2.50 postal service book rate.



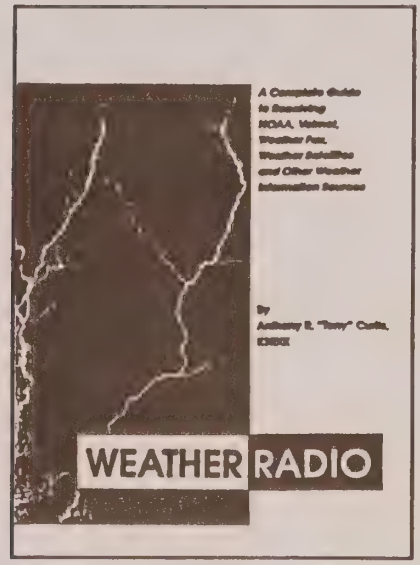

TV—STEREO—RADIO—POWER LINE—TELEPHONE
INTERFERENCE HANDBOOK
How to locate and cure RFI
Radio Frequency Interference
Amateur Radio, CB Radio, Power Line
RFI problems analyzed and solved
TV & stereo owners the causes
and cures of annoying interference
WILLIAM R. NELSON, WA6FQG

Interference Handbook

William Nelson

Nowadays, we are surrounded by electronic equipment, all of which is designed to make our lives better. It can also wreak havoc with our radios, TVs and stereos.

The Interference Handbook shows you how to locate and cure RFI -- Radio Frequency Interference. From those annoying lines on your TV screen to the noise that makes your local police channel inaudible to "ghost" voices on your cordless phone, this book shows the causes and cures of annoying interference. Hundreds of subjects are covered: home, business, and industrial sources of RFI plus filters you can buy or build, case histories of difficult RFI problems solved, Cable TV problems, mobile interference and more. You'll be surprised at what's causing your agony and how easy it is to find a cure. An authoritative addition to any radio hobbyist's library. $11.95 plus 4.25 UPS or 3.00 book rate shipping.



Weather Radio

Anthony "Tony" Curtis

Your scanner can be your private source for up-to-the-minute local weather forecasts. There's special 24-hour-a-day transmissions sponsored by the U.S. Oceanographic and Amospheric Administration (NOAA). (Incidentally, NOAA also provides official government information in time of nuclear attack.) There's also marine weather radio, aeronautical weather stations and dozens more. *Weather Radio* is weather-everything -- frequencies, what to listen to, when and where, and an explanation of what it all means. It's truly a complete guide to tracking weather and storms via radio. $16.95 plus 3.75 UPS or 2.50 postal book rate.

New 12th Edition

Compendium of American Railroad Radio Frequencies

Gary Sturm and Mark Landgraf

If you're a rail fan (and who isn't?) then this book is essential for chasing trains on a weekend outing or monitoring the rails nearby. "Railroad Radio" is a thorough source of rail frequencies. Complied by seasoned rail monitors, Sturm and Langraf, the main portion of the work is an alphabetical listing of frequencies by railroad name with system-wide, and individual city and yard frequencies. System maps compliment each listing. A good introductory section plus other listings including Canada and Mexico, and metropolitan areas round out this tome -- all in a handy 8 x 5½ in. format. $16.95 plus 3.75 UPS or 2.50 postal service book rate.

The Reviews Are In!

"The Scantenna -- Five Stars"

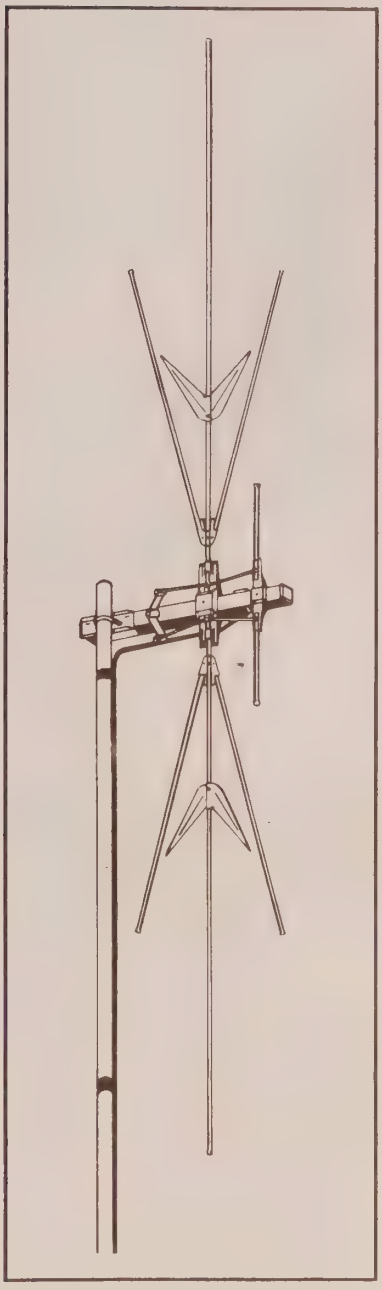
★★★★★

"I'M FOUR COUNTIES AWAY AND NOW I CAN HEAR MILWAUKEE!"
--Pete Edwards, Lake Geneva, Wisconsin

"I CAN HEAR THINGS WITH MY SCANTENNA THAT I NEVER KNEW EXISTED BEFORE!"
--Ken Peters, Los Angeles, California

"I'VE THROWN AWAY THAT LITTLE WHIP ANTENNA THAT CAME WITH MY SCANNER."
--Carroll Ethridge, Berkey City, Tennessee

"WOW! WHAT A DIFFERENCE! THE SCANTENNA IS THE BEST!"
--Travis Lantz, Iowa City, Iowa



The Scantenna is a quality antenna manufactured in the U.S. by AntennaCrafters, a firm well-known for its TV and FM antennas.

There's an old saying among communications specialists: your scanner is only as good as your antenna.

Get the most out of your scanner with the famous Scantenna. Designed for use with both handheld and base scanners, it dramatically increases the range of your radio by miles. Actual distance depends on local terrain and height at which you mount the antenna. The Scantenna provides continuous frequency coverage from 25--1300 MHZ providing superb reception of communications of all types. And it comes with a mounting kit and 50' of RG-59/U cable.

The Scantenna is available from DX Radio Supply for $39.95 plus $5.00 UPS. Optional Motorola to BNC connector $3.95. Send check or money order to P.O. Box 360, Wagontown, PA 19376. Or use your Mastercard or Visa and call our 24-hour order line, **610 273-7823.**

Please send me a Scantenna. Here's my check or money order for $39.95 plus $5.00 UPS shipping. DX Radio Supply, Box 360, Wagontown, PA 19376.

Name ----------

Street Address ----------

City ---------- **State** ---------- **Zip** ----------

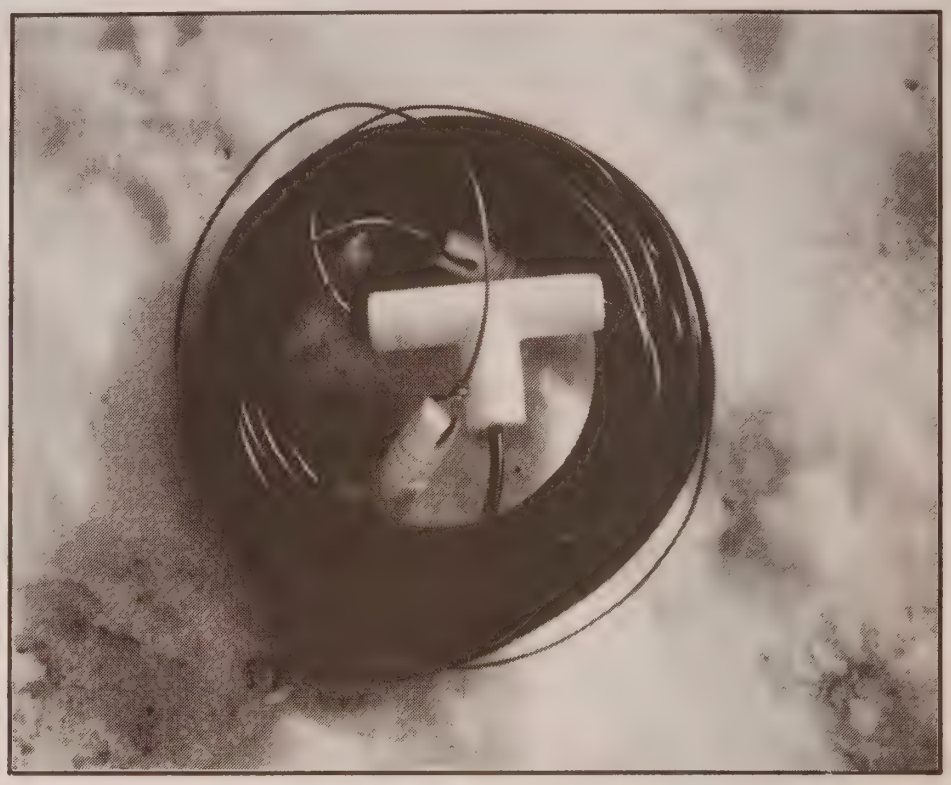
Please bill my bank card. My MC or VISA number is:

---------- **Expiry Date** ----------

Signature ----------

Antennas cut especially for what you want to hear!

Max 46-49 MHz Cordless Phone Antenna



If you're interested in hearing ALL the baby monitors and cordless phones in your neighborhood this is the BEST. A 15 ft. dipole antenna, this antenna is cut just to hear the 46-49 MHz range and nothing else. And what a job it does; it works better than any broad band antenna on cordless and monitors because it's made just for that purpose. It comes with 50 ft. of coax cable which makes it real easy to hook up inside or out. Quick on-off works equally well with handheld or base models. Just $49.95 plus 4.00 UPS.

Max 800 MHz Ground Plane Antenna

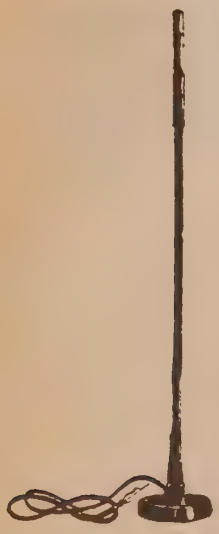
This ant is one hot performer on the 800 MHz band. If you want to hear cellular communications or if your police and fire has moved up to 800 MHz, this antenna will capture all the action. Made just for 800 MHz ONLY, it out performs any general coverage antenna. The Max 800 Ground Plane is conveniently sized and works equally with handhelds and base models. Get yours today. Handheld model $31.95 or base model 35.95 plus 4.00 UPS. Can be mounted on a mast like an outdoor antenna, too (cable not included).

DX Radio Supply
Box 360, Wagontown, PA 19376
or call **610 273-7823** 24 hour order line

Use Your VISA or Mastercard

PA res. add 6%. All sales final.

Take to the Highway



Our Best Mobile Whip

"Hi-P" by Tiger

Don't settle for compromised reception when you take your scanner on the road. Now the Tiger High Performance mobile whip is here! Utilizing an exclusive helix construction, this sleek, black, 24 in. fiberglass whip, assures premium signal reception throughout the spectrum. Hear low band, FM, aircraft, high band, military, land mobile and cellular. Strong magnet mount is guaranteed to withstand interstate highway speeds, yet pulls off easily. Generous 12 ft. of coax included. Can also substitute for stock whips for indoor use where a large outdoor antenna is impractical. $49.95 plus 4.50 UPS. Optional BNC connector $3.95.

Steel Whip Mobile Antenna

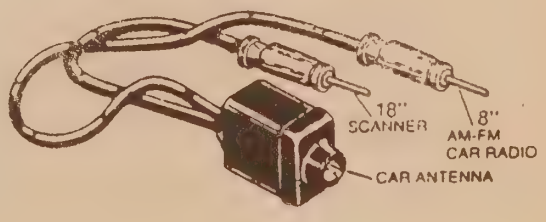
This is a good magnet mount antenna for listeners who are looking for a lesser priced unit. Sturdy 18 in. stainless whip is designed to cover the entire scanner range. Comes with 12 ft. of cable. Easy on/off. $27.95 plus 4.50 UPS. Optional BNC connector $3.95.

Windshield Mount Scanner Antenna

If you don't care for magnet mounts but still want to do better than the rubber ducky, try our thru-the-glass mount. Simply clean an area of windshield and stick the antenna to the base. A companion coupler on the inside of the window does the rest. Designed for today's wide coverage scanners. Includes 15 ft. of cable. $34.95 plus 4.50 UPS. Optional BNC connector $3.95.

Scanner Antenna Converter

Turn your car's AM/FM antenna into a full-range scanner antenna. No gluing, scraping or soldering. Just plug it in. Installs in seconds and does not interfere with regular radio reception. This is the cheapest way to get a mobile ant for your scanner! $15.95 plus 4.00 UPS. Optional BNC connector $3.95.



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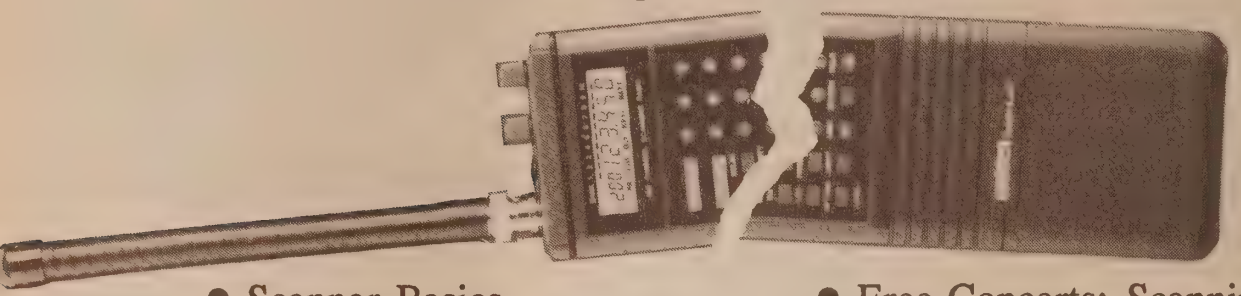
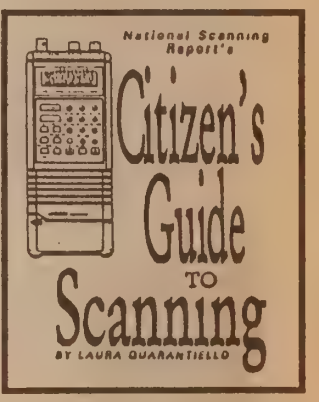
America's #1 Selling Scanner Book!

Citizen's Guide to Scanning

"If you don't have a copy, you're missing half the action."



- Scanner Basics
- Getting Started
- Hidden Police Frequencies
- Fire Communications
- Emergency Medical
- Scanning Aviation Disasters
- Cordless Phones: Knowing Your Neighbors Intimately
- Business Radio
- Hear Air Force One
- Monitoring the Military
- Maritime Communications
- Railroads
- 24-Hour-a-Day Weather
- Free Concerts: Scanning the Entertainment Industry
- FBI
- Hot Tips: Monitoring the News Media
- "800 MHz" Cellular Phones
- Listen to the Space Shuttle
- Coast Guard Search-And-Rescue Operations
- Fast Food Restaurants
- "Top Gun" Fighter Pilots
- Emergency/Disaster Communications
- Much, Much More!



Please send me the *Citizen's Guide to Scanning* for just $19.95 plus $4.00 UPS
I have enclosed a check, money order or Visa/Mastercard no. and expirydate. (PA res. add 6% sales tax. Canadian res., please order by bank card only.)

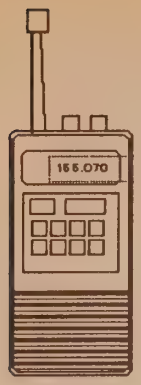
Name _____

Shipping Address _____

City _____ State _____ Zip _____ Phone _____

Total Enclosed _____ VISA/Mastercard _____ Expiry _____

DX Radio Supply P.O. Box 360, Wagontown, PA 19376 • 610 273-7823 24 hours



It's easy to order from

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Call our 24-hour order line or order by mail

NAME _____ PHONE (INCLUDING AREA CODE) _____

SHIPPING ADDRESS (UPS DELIVERS ONLY TO A STREET ADDRESS.) _____

QTY.	ITEM DESIRED	PRICE	TOTAL

ITEM TOTAL	
SHIPPING	
PA SALES TAX	
GRAND TOTAL	

Save on Shipping

Ordering more than one item? Start with the shipping cost of the heaviest item and then add $1.50 for each additional item The Scantenna cannot be combined with other items ior shipping discounts.
Sorry, no COD.

Protection for Credit Card Holders

When using a bank card, merchandise must ship to the address to which the card is billed. All cards are verified. If you are unable to provide this information, please use a postal money order or check.

Northern Neighbors

UPS orders to Alaska and Hawaii can only go via UPS 2-Day Air. Please add $7 to regular shipping charges. Canadian customers, please make payment Visa or Mastercard or US cash only.

Blah, Blah, Blah

Prices subject to change without notice. Not responsible for typographical errors. PA residents add 6% sales tax. All sales final.

Shipping Method *please check one*

☐ UPS ☐ BOOK RATE ☐ UPS 2ND DAY
(add $7 to regular rates)

Payment Method

☐ CASH ☐ CHECK ☐ MONEY ORDER

☐ VISA/MASTERCARD

CARD NUMBER _____

SIGNATURE _____ EXPIRY _____

Thanks for ordering from DX Radio Supply!

LETTERS

Still Listening

Sometime ago Rocky Mountain News staff writer Tustin Amole placed his foot firmly in his mouth when he said that scanner listeners would be unable to hear Denver's new 800 MHz radio system. "The new system will lock out scanner enthusiasts. The new high-tech police radio requires equally high-tech scanners to hear the transmissions." Ol' Tustin was perpetuating a media myth, as a NatScan reader in Denver proved. Not only did our club member send us a copy of the news clipping heralding the demise of scanning in Colorado, he also sent a list of the Denver Police 800 MHz frequencies. We reprint them here for your enjoyment...and to prove once again that you can't lock a good scanner listener out.

Denver Police Department

1 854.9875	6 857.7375	11 855.2375	16 858.2375
2 855.4875	7 858.4875	12 855.7375	17 858.7375
3 855.9875	8 859.2375	13 856.2375	18 859.2875
4 856.4875	9 859.7375	14 856.7375	19 860.2375
5 857.2375	10 860.4875	15 857.4875	20 860.7375

You Heard It Here First

Dan McNulty tells us that "there have been some rumors as to Burlington Northern Railways adding new radio frequencies to get rid of some of the congestion on 161.100 and 161.160 MHz. Licenses have been issued in the Minnesota area." Good guy that he is, Dan sent us the new numbers, saying that two of them are already in use and have been confirmed as belonging to BN. 160.695 Anoka to Staples; 161.385 Carlton to Bemidji; 160.920 Delano to Benson, Washington; 161.280 Perham to Bluffton; 161.280 Frazee to Lake Park.

All It Takes Is Money

Would you say $80 million dollars is a bit much for a radio system? County officials in San Diego, California don't think so. According to a clipping dropped to us by David Wright (CO 0 AAK) of Oceanside, the county's 450 MHz system wouldn't hold up during a major disaster. Armed with this stunning information, officials are rallying for a new 800 MHz system to tie all communications into one network. If this goes through, listeners will have their hands full! In Missouri, the Jasper County Sheriff's Department is complaining about their outdated radio system, installed in 1977. "It's a dinosaur," said Sheriff William Pierce. Even the jail administrator is citing the radio system as vital to deputy safety. Unlike San Diego, Jasper County isn't asking for an expensive system, only "a good reliable source of communications."

Aww, Go On!

"I am relatively new to the hobby of scanning and your publication has been an excellent source of information," wrote Pamela D. DePreste of Joplin, Missouri, "It has really helped me to get the most from my BC200XLT. I had no idea scanning could be so exciting! Thank you, to you and your wonderful staff!" Pamela was kind enough to include the frequencies for the Joplin Police Department's new trunked radio system. "Another frequency that may be of interest, 463.275, which is Northpark Mall Security in Joplin. This one is best on Friday and Saturday evenings!"

Joplin Police Department

856.4875 • 811.4875 • 857.4875
812.4875 • 858.4875 • 813.4875
859.4875 • 814.4875 • 860.4875
815.4875

"No other publication gives you so much current information..."

– RCMA Scanner Journal

POLICE CALL is the most up-to-date frequency directory you can buy. Got a scanner? Get...

POLICE CALL

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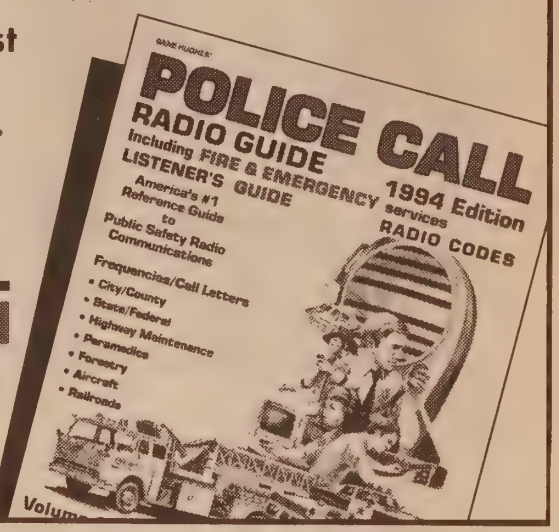
•At your scanner dealer
•At all Radio Shack Stores



How Many?

Warner Chapman was perusing the newspaper over breakfast at McDonald's when he came across an article about cellular phone eavesdropping. We've all heard this story, of course, but one point in particular caught Warner's attention. The article, written by M.J. Richter of Governing Magazines says: "There are about 11 million cellular telephone subscribers in the US and roughly the same number of radio scanners used to listen in on such calls." Nuts! says Warner. We think these are fishy numbers, too. Warner uses four scanners without an outside antenna, since he's on the bottom floor of a three story apartment. The good news is that he is on the highest hill in Morgan County, Indiana and can receive Indianapolis and other counties. He's using a BC800XLT, BC760XLT, PRO-2006 and BC148XLT.

Arctic Scanners

You've just got to hear this story sent in by Samuel Meola in Bloomingdale, New Jersey. Apparently, Samuel left his two scanners -- Bearcat 855XLT and BC55XLT -- in the trunk of his car for two days during an ice storm. "When I pulled them from the car, the 855XLT had frost all over it and the knobs were frozen stuck. I thought neither scanner would ever work again." Within twenty-four hours, after the scanners warmed up to room temperature, Samuel reports that they began to work again with no glitches. "My hat goes off to the people at Uniden for making such a rugged scanner. What do you think? Did I get lucky or are scanners made to cope with frigid weather?" Well, we must confess that a tiny little division of Uniden is working on a top secret Arctic Scanner Project. We don't recommend that you try this at home, damage to your scanner could result. Leave the sub-zero scanner testing to the experts and we'll report our findings after Project engineers return from the icebox testing tunnel. **Just kidding. But Uniden scanners are made to work in extreme conditions.**

A Mistake? Us?

Our thanks to Howard Miller (NY 2 AAC) in Spring Valley, New York for his corrections to the Rockland County frequencies we ran in the Jan./Feb. issue. Howard says that 159.885 belongs to the Hatzolah Ambulance Corps, which is dispatched by Ramapo Township Police. "155.260 is not a viable freq" and therefore doesn't belong to Ramapo Volunteer Ambulance Corps. "Ramapo ALS and BLS are dispatched by Ramapo Police on 155.355." Howard is a 62 year resident with four scanners running, "one usually set for EMS calls in Ramapo as well as one for fire calls." He is also a 42 year volunteer member of the Hillcrest Volunteer Fire Department. Thanks for the corrections, Howard and keep up the good work.

Also, in Jan./Feb. issue in the "Ask the Experts" column, we reported 868.9875 MHz to be a nationwide interagency fire channel. Reader Bob Ferrell called up to question us on this. And then **columnist** Gene Hughes set us straight with this explanation: "868.9875 is not a FCC mandated fire interagency channel. In California, it's a medical mutual aid channel. The Five National Public Safety channels (one calling and four tactical) are for law enforcement and fire supression. During the worst of the quake aftermath, LAFD used those channels for fireground tactical purposes, and they sure came in handy." Thanks, Gene.

Bits and Pieces

• Robert Krasnoff (FL 4 ALX) in Delray Beach, Florida tells us that he's looking for other scanner buffs in the area. Meanwhile, here are some active numbers from Robert's scanner: 154.845 Palm Beach County Sheriff, 154.400 Boca Raton/Delray Beach Fire, 418.975 DEA, 463.000 and 463.125 Palm Beach County

to Bill Black (GA4AAR). 855.7875, 855.8125, 856.8125, 856.8375, 857.8125, 857.8375, 857.9125, 858.7875, 854.8125, 854.7875. Bill is a "big fire buff and now that my computer and printer are up and running, hopefully you will get some more info later." We look forward to it, Bill.

• "Audio for TBN Channel 45, a new non-cable TV channel in the Jennings, Louisiana area can be heard on 817.950 MHz." James E. Lewis stumbled across this one while searching for his local sheriff's 800 frequencies.

• Our man in Nanaimo, BC, Canada writes to point out some corrections to our BC Ferries listing in the Nov./Dec. issue. According to Robert Smith (BC 7 AAB) "The primary frequency used by BC Ferries is 155.910 for communications between the terminal and ferry. Traffic loading coordination is on 458.1125 and 458.6375." Ship to shore telephones operate between 454.375-454.625." Look for Vessel Traffic Control frequencies in the 156 MHz range. Thanks, Robert!

• Here's some very active frequencies for Buffalo Police and Fire in New York, courtesy of James Rokitka (NY 2 ATY): Police F1 460.325, F2 460.350, F3 460.425, F4 460.475, F5 460.025. Fire F1 154.190, F2 154.355.

• Ira Paul from Oak Park, Michigan likes to monitor 851.4125. "I hear what sounds like high ranking Detroit Police using a phone patch on this frequency. I can hear these officers calling home and griping about their jobs or arguing with wife or kids. Also, I can hear them calling other officers (probably detectives) and discussing cases." Warren, Michigan Police are active on 856.0875 and 852.4875. Heavy surveillance radio traffic on 424.025 and 424.375.

• Bob Powell in Indianapolis, Indiana wrote telling us that he uses a PRO-2006 and PRO-46. "I pick up stations all over the state." Bob sent us some frequencies for Indy:

State Police District – 52 860.9625, 859.9625, 858.9625, 857.9625, 856.9625.
City and county workers are – 859.9875, 858.9875, 858.4375, 857.4375, 857.9875, 856.9875, 856.4375, 855.9875, 854.9875, 859.4375.

• Cheryl Thompson (TX A KJ) wrote looking for Tyler, Texas or Smith County, Texas Drug Enforcement Agency frequencies. Apparently the DEA is active on with DPS on a statewide link on 155.505 "but it doesn't talk much!" DEA transmits primarily on frequencies in the 418-419 MHz band. Look there for activity. Cheryl tells us that Air One aeromedical helicopter from Medical Center Hospital operates on 155.175 and 155.340 and fly almost every day.

• Joseph F. Heleringer (FL 4 AEA) in Pompano Beach, Florida listens to Metro Traffic Control on 450.650 and the Tri-Rail commuter train on 161.100. Joseph calls himself a faithful reader, and frankly, we believe him!

• Even Ann Landers herself has been duped about scanners, according to Hubert Harris (MO 0 AGF) in Macon, Missouri. In a recent column, Ann claims that "most scanners can pick up only one side of the conversation if you are using a cordless or cellular phone, regardless of what kind of phone the other person is using." Shall we write to Ann and set her straight? I don't think so! Let's just allow this disinformation to circulate a bit.

• A message from Mark Rothberg on the NatScan Bulletin Board Service confirms that New York City Transit Authority Buses have been using their 800 MHz frequencies for well over a year now. We reported on NYCTA freqs in an earlier issue.

• Our mystery man in New York City dropped us some invaluable information on frequencies for the 1993 New York City Marathon. We don't know where he came up with these official race documents, but we gladly reprint the numbers for our readers. Tuck them away for the next race this fall.

446.675 Logistics South
449.375 Medical South
449.675 Drop Out South
440.600 Logistics North
440.550 Medical North

449.675 Drop Out South
440.600 Logistics North
440.550 Medical North
444.050 Drop Out North
443.250 Pre-cursor and Trail Vehicle Simplex
445.075 Course-Wide VP
446.900 Central Park Tactical
449.075 Central Park Logistics
443.325 Finish Area/Family Reunion Simplex
147.750 Blue Convoy/Red Convoy Control
144.345 Fort Wadsworth Simplex
447.725 Fort Wadsworth VIP Net
450.5875 Empire State Building
450.2125 CC Camera Listen
486.5000 CC Camera Talkback
450.1625 CC Bike 5 IFB
450.1125 CC Select/Outrider IFB

"Best book for beginner and expert alike..."

– Northeast Scanning News

More people buy POLICE CALL than all other VHF/UHF directories combined. Got a scanner? Get...

POLICE CALL

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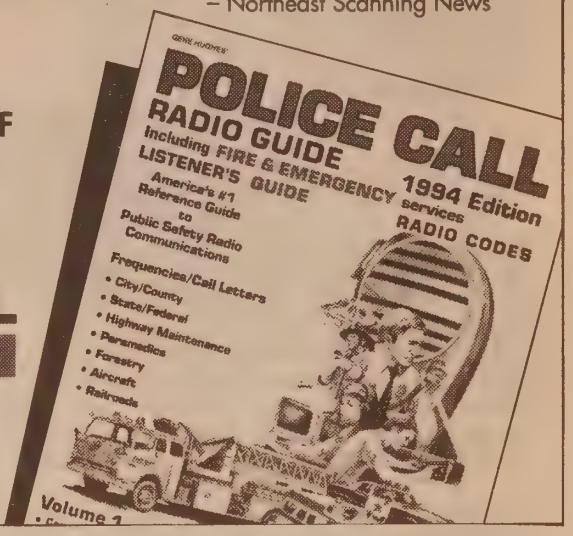
•At your scanner dealer
•At all Radio Shack Stores



• Wayne F. Paige in Rochester, New York sent us a great five page list of frequencies. We've excerpted some of the more interesting listings here in the hopes that listeners in that area can use them.

151.310 Environmental Conservation
159.465 Environmental Conservation
159.435 Environmental Conversation
151.895 Monroe County Emergency Operations System
155.490 Jail/Morgue
453.525 Buffalo Thruway
453.425 Syracuse Thruway
464.325 Highland Hospital
461.800 Genesee Hospital
155.280 Rochester General Hospital
464.700 U of R Campus Base
464.600 U of R Campus
453.200 Monroe Community College Security
453.675 Monroe Community College Security
153.320 General Motors Company
122.950 Page Avjet Corporation
151.625 Hot Air Balloons
44.920 Hamlin Beach Park Patrol

• "I have a Bearcat 205XLT scanner hooked up to an outdoor antenna, and also a BC177XLT," says Chad Cessna of Ebensburg, Pennsylvania. "I have my amateur radio license. I enjoy reading your magazine. Please keep up the excellent work!" Thanks, Chad and thanks for the frequencies.

33.700 Cambria County Fire
33.460 Cambria County Fire
155.175 Cambria County Ambulance
154.515 Ebensburg Area Ambulance
453.200 Cambria County Police
453.575 Cambria County Sheriff
154.665 Ebensburg State Police
158.910 Ebensburg State Police
155.460 Ebensburg State Police
122.800 Ebensburg Airport
145.210 Ebensburg 2m Ham Repeater

And the Winner Is...

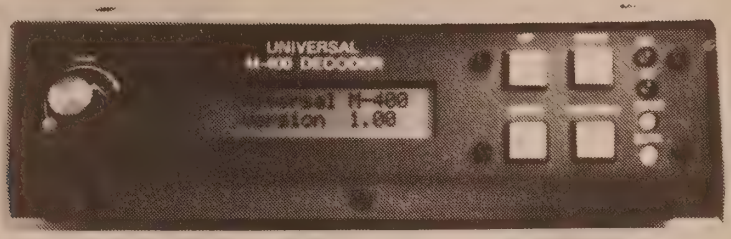
Many, many thanks to the hundreds of you who entered our contest to win a brand new BC890 XLT. This sleek new radio scans at a speedy 100 channels per second, has 200 channel memory, auto search and store, and dual conversion. It retails for more than $250.00. And now, the lucky winner is...Jerry Kacprzycki (OH 8 BBO) of Cleveland, Ohio. Congratulations and best of listening, Jerry!

Send us your letters, *newspaper clippings, frequencies, photos – anything you'd like to share about your scanning hobby. And then look in the pages of "Letters" to find out what's happening in scanning!*

NatScan Box 360, Wagontown, PA 19376

The Ultimate Accessory for Every Shortwave & Scanner Enthusiast

UNIVERSAL M-400



Many early teletype listeners started their monitoring hobby with code readers. However, readers have fallen out of favor in recent years because of their limited performance, limited mode coverage and lack of features. The M-400 reverses this trend, providing a high quality demodulator, extensive mode coverage, state-of-the art display and parallel printer port. The Universal M-400 incorporates capability never seen in a reader before. It is the ultimate affordable accessory for the SWL and the scanner enthusiast.

The M-400 provides all the benefits of a reader, without the limitations. The M-400 is totally self contained; there is nothing else to buy. It is compact and operates from 12 VDC making it a natural for auto or boat installations. The two line liquid crystal display provides a (40) forty characters readout (not just 8 or 16 like other readers). This super-twist LCD can be read from any angle, and the front of the M-400 is sloped to provide the optimum in viewing and operating convenience. LED indicators for *Mark, Space, Input* and *Data* are provided. A gray, all-metal cabinet provides a solid look of quality. For the shortwave listener, the M-400 provides all the standard reception modes ... and then some.

● **SHORTWAVE MODES**
- **Baudot,** the original RTTY mode, can be copied in all five speeds (45, 50, 57, 75 and 100 baud). Baudot is used by some press agencies and weather stations.
- **SITOR A and B** are extremely popular teletype modes on shortwave. SITOR is used for communications between ships and coastal stations.
- **FEC-A** is a new press-diplomatic mode gaining wide acceptance primarily in Europe. Extensive FEC-A traffic can be monitored in North America during the day.
- **ASCII** at 75, 110 and 150 baud.
- **SWED-ARQ** This Swedish diplomatic mode can be copied in the U.S.A. during the day.
- **FAX** - That's right; with a graphics compatible parallel printer attached, you can copy FAX from shortwave. You can print weather maps and charts from around the world. The printer is optional. (FAX decoding is at 120 LPM, 576 IOC).

● **VHF-UHF MODES** will be enjoyed by the scanner enthusiast.
- **ACARS** Stands for *Aircraft Communications Addressing and Reporting System*. This new aviation teletype mode is in wide use at most major airports. Extensive traffic can be copied from both nearby commercial airports and aircraft. The M-400 is the first unit to offer this capability.
- **GOLAY** digital pager mode.
- **POCSAG** digital pager mode.
- **DTMF** decoding of all 16 DTMF digits.
- **CTCSS (PL)** frequency decoding is also available. Read all 41 standard tones.
- **DCS** (*Digital Coded Squelch*, also referred to as *Digital Private Line*) all 104 standard codes.

The M-400 has several functions that you can program. With the use of an optional speaker, the M-400 can be programmed to pass only the audio you want to hear! You can set the M-400 to only activate the speaker when it receives a CTCSS, DCS or DTMF code of your choosing. The M-400 comes with an instructive *Owner's Manual* and a wall adapter that provides 12 VDC. Note: For accurate DCS and PL reception, direct connection to the receiver's discriminator may be required. One year limited warranty. Manufactured in the U.S.A. by Digital Electronic Systems. The M-400 is *the* affordable accessory for every shortwave or scanner enthusiast. Available now for only **$399.95** (+$6). Order *#0400.*

RECEPTION MODES

- **RTTY Baudot**
  45, 50, 57, 75 and 100 baud.
- **SITOR A**
  ARQTOR, Amtor A
- **SITOR B**
  FECTOR, Amtor B, NAVTEX
- **ASCII**
  75, 110 and 150 baud.
- **SWED-ARQ**
  3, 9 or 22 character groups.
- **FEC-A**
  96, 144 and baud.
- **Facsimile (FAX)**
  120 LPM 576 IOC
- **POCSAG**
  Digital pager mode.
- **GOLAY**
  Digital pager mode.
- **ACARS**
  VHF Aviation teletype mode.
- **DTMF**
  16 digits
- **CTCSS (PL)**
  41 standard frequencies
- **DCS (DPL)**
  104 standard codes

SPECIFICATIONS

Dimensions	8.75"W x 2.5"H x 8"D
Weight	2 Lbs. (5 Lbs. ship with PS)
Display	LCD two line 40 char. total
Filter Tones	Low tone (mark = 1275 Hz)
	Fixed: 170, 425 and 850 Hz
	Variable: 100 - 1000 Hz
Power	11-16 VDC @ 200 ma
	AC wall adapter included.
Speaker Input	4-16 Ohms 100 MW max
	Mono mini jack (1/8")
Discriminator Input	10K Ohms .25V max
	Mono mini jack (1/8")
Speaker Output	Mono mini jack (1/8")
Printer Output	Parallel ASCII 8 bit Centr.

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Listen to the Dispatcher

POLICE
FIRE
EMS

By Tom Swisher

There is one person in the public safety communications chain who rarely gets any of the heartfelt thanks or attention lavished upon police officers, firefighters and medics: the dispatcher. To many people, the dispatcher is simply a voice on the radio that passes on calls and information to the people on the street.

The reality is much different. The dispatcher is the most important link in the communications chain, simply because without the dispatcher, the people on the street get no information and there is no one there to help them if they get into trouble; meanwhile, the people at home in their comfortable houses have no one to call with their problems. A good dispatcher must be polite but firm, interested in the job, and must be part psychiatrist, part doctor, part firefighter, part lawyer, part home repair specialist, and part administrative assistant, all rolled into one.

For both street personnel and scanner listeners, paying close attention to the dispatcher can net you a wealth of information on what is going on, and some good insight as to the magnitude of those events. The most important thing about listening to the dispatcher is paying close attention to the tone of voice of the dispatcher. If the dispatcher sounds relaxed and is more talkative (perhaps throwing in a few wisecracks here and there), there isn't much going on; assuming all of the clerical work is done, the dispatcher is probably sitting there watching TV or reading a book if no one is talking on the radio. This is a great way to spend a work shift, and can go a long way toward keeping the dispatcher's peace of mind at a normal level.

Listen carefully, though! All at once, the phones are ringing off the hook; callers are screaming and yelling on the phone, demanding to be taken care of immediately; other people are calling with petty, ridiculous complaints about the neighbor's dog relieving itself on their lawn; every police officer on the street is calling in a traffic stop at the same time; the fire phone is ringing with reports of a fire alarm, and another caller on the 9-1-1 phone is screaming about her child not breathing, and the dispatcher must send the medics right away, while attempting to explain how to administer CPR over the phone. If you think this scenario sounds far-fetched, think again. It has happened to me before, and it happens to many dispatchers on a regular basis, especially since the vast majority of public safety agencies (including mine) usually have only one dispatcher on duty at any given time to handle all of the activity. The dispatcher is going to sound tense, perhaps slightly breathless, maybe even stressed out, and is going to keep his or her transmissions very short and to the point. It's getting busy, and the dispatcher's adrenaline level has gone from normal to astronomical in a matter of seconds.

Fire and EMS Dispatching

Fire and EMS dispatching is one of the easiest ways to get a dispatcher's adrenaline level from normal to astronomical very quickly. Since almost any call for assistance is an emergency call, things can get tense very quickly when lots of calls come in. When listening to the dispatcher send a fire run, listen to the message. Have several calls been received about an apartment building on fire? Have there been reports of people trapped with fire through the roof? The phones are still ringing off the hook, and the dispatcher has to field these calls even while dispatching the run. Hearing these things can point you in the right direction to hear the excitement and tragedy of a major fire.

EMS dispatching is basically the same as fire dispatching, since the principles and most of the procedures are the same. There is sometimes the added dimension of the dispatcher attempting to explain, over the phone, how to administer CPR; this must be juggled with dispatching the run and calling for mutual aid medics if they are needed. If EMS and fire dispatching are separate, the EMS dispatcher must also call the fire department if engine or rescue companies are needed.

One thing to listen closely to is the background noise of the radio room while the dispatcher is speaking. Are there several phones ringing at once? Are there several different radio channels blasting in the background with dispatch messages or emergency traffic? There may also be (if there is more than one dispatcher on duty) a babble of voices in the background from the other dispatchers. All of these things can clue you in to the busy times.

Police Dispatching

Unlike fire and EMS dispatching, much of the activity you will hear from the police department is strictly routine. Traffic stops, building checks, vehicle registration and stolen file checks, driver status checks, stranded motorists, all of these are routine, business-as-usual stuff for most police departments. Since fire and EMS dispatching usually involves the use of alert tones for just about every run, it is easy to pick out dispatch messages from the routine traffic. Police dispatching, on the other hand, does not use tones very often except for the REALLY hot runs like shootings and stabbings, or other really violent stuff. As a result, it is more difficult to discern from the routine traffic the dispatch messages for runs that could be really interesting.

Just like listening to other things on your scanner, you will eventually get the knack of mentally "tuning out" the routine traffic. This is a knack developed by all dispatchers, and you can develop this habit after listening to you local police department for a few weeks or months; the time it takes before this becomes second nature varies depending on the individual. As you develop the knack, you will learn how to pick out normal and routine stuff from the action-packed kind of stuff you see on "COPS" Saturday nights.

Like listening to fire and EMS dispatching, listen closely to the background noise of the radio room while the dispatcher is speaking. Are the phones ringing off the hook? Can you hear sirens blasting away on other radio channels in the radio room? This could indicate a pursuit in progress. In the larger departments with several dispatchers on duty, can you hear the other dispatchers all talking at once? If you hear all this, things are getting busy!

If you are a die-hard scanner enthusiast with more than one scanner at your listening post, another trick mastered by dispatchers that you should master is the ability to listen to two (or more) signal sources at once. It may seem chaotic at first, but you will learn quickly how to "listen" to two or more scanners at the same time. You will find yourself paying close attention to one while mentally "tuning out" the other(s), but imagine your surprise when you actually hear and understand both scanners at the same time. All it takes is a little practice and a lot of patience.

Remember, listening to the dispatcher can be very informative, so pay attention to them. Oh, and by the way, the next time you call the police or fire department for information and assistance, remember to thank the dispatchers for the good job they do.

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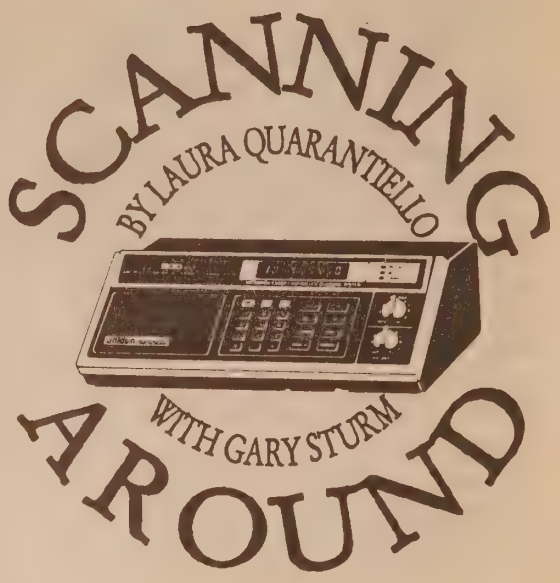
DISASTER MONITORING



Is your scanner ready for the Big One? Several readers wrote with concerns, saying that they weren't prepared for the California earthquakes or the East Coast cold. There's a great sinking feeling that hits as you sit fumbling with frequency books and scanner knobs, trying to get vital information. Our scanners are supposed to keep us in touch, but if you're not prepared, you'll stay hopelessly out of touch as critical minutes tick past.

The large channel capacities of most scanners today allow us plenty of room to customize. As part of your disaster monitoring plan, set aside one bank of your scanner's memory as the emergency bank. Bank Ten or the last bank available is usually a good one for this. Pull down your frequency books and lists and spend some time combing through them, extracting only those frequencies that would be most active in an emergency. Our goal is to get the most information possible in a short time, so include police or sheriff dispatch, car to car and tactical channels as well as city or countywide mutual aid. Follow the same procedure for fire and emergency medical service frequencies.

Dedicated disaster frequencies such as those belonging to civil defense, emergency coordination, and office of disaster preparedness should be included. These won't be active until an emergency actually occurs, and then they will become very hot.

City public works is a excellent frequency to keep you advised of damage in your area; also include water and power departments and any other utilities of interest. Peripheral frequencies such as FAA, US Coast Guard, military, Federal Emergency Management Agency, and others can be included for information. Remember that many of these, especially FEMA or other emergency aid organizations may not become active until the emergency is well along. Keep them handy anyway.

News media can bring vital information, but don't rely only on network TV broadcasts. Program in any news frequencies for your area. You would be surprised how fast these heat up, especially as cellular telephone service becomes saturated, and reporters need to stay in touch. Don't forget traffic or news helicopter frequencies, which are great for advising of road conditions and for impromptu damage reports.

Of course, if you have a second scanner, use it to search for new frequencies while your first scanner is trolling through your emergency bank. If you are scanner-limited, and have only one, stay with the emergency bank until things cool down enough to allow you to break away to run a search range or two. Above all, keep listening! Here are some quick reference nationwide emergency numbers to help you stay in touch.

47.420	American Red Cross
47.460	American Red Cross
47.460	National Jeep Search and Rescue
47.500	American Red Cross
47.520	American Red Cross
47.540	American Red Cross
138.575	Federal Emergency Management Agency (FEMA)
139.450	FEMA
139.950	FEMA
142.350	FEMA
142.425	FEMA
142.450	FEMA
150.775	Emergency Portables
150.790	Emergency Portables
155.175	Emergency Medical Services
155.205	Emergency Medical Services
155.235	Emergency Medical Services
866.0125	National Public Safety Calling
866.5125	National Public Safety Calling
867.0125	National Public Safety Calling
867.5125	National Public Safety Calling
868.0125	National Public Safety Calling

COURT LISTENING

Monitors near some federal court buildings indicate that they're hearing activity on 162.7125 and 170.850. These numbers usually belong to the United States Marshal's Service, whose deputies provide security and escort at most court buildings. Listeners say that by scanning around the federal bands, you're likely to pick up other court related communications, much of it in simplex, low powered mode. If you're in Washington, DC, try 163.100 for U.S. Supreme Court security officers.

REDISCOVERING LOW BAND

All the action is up on the VHF-Hi and UHF bands, right? Why even bother with VHF-lo, there's nothing there. Hold on, friends, back up a bit. The low band, 30-50 MHz, is full of action and if you're ignoring it, you're missing out. Fire, state police, forestry, business, power and water communications are still hot down on the low end. How long has it been since you went hunting for those signals? Set your search ranges, and use the following band breakdown as a guide.

25.000–25.330	Petroleum
25.330–25.600	US Government
25.600–26.480	Broadcasting
26.480–26.960	US Government
26.965–27.405	Citizens Band Radio
27.430–27.530	Business Radio
27.540–28.000	US Government
28.000–29.700	10-meter Amateur
29.700–29.890	Forestry Radio
29.890–30.000	US Government
30.000–30.560	US Government
30.560–30.640	Special Industrial
30.640–30.820	Petroleum/Motor Carrier/Forestry
30.820–31.260	Business/Motor Carrier/Forestry
31.260–31.980	Forestry/Special Industrial
32.000–33.000	US Government
33.020–33.160	Highway Maint./ Sp.Emergency/ Business
33.160–33.400	Petroleum Radio Service/Business
33.400–33.980	Fire Radio Service
34.000–35.000	US Government
35.020–35.180	Business Radio
35.180–35.520	Paging/ Special Industrial
35.540– 35.680	Paging Services
35.680–35.720	Business Radio
35.720–35.860	Special Industrial Radio Service
35.860–35.980	Business Radio
36.000–37.000	US Government
37.000–37.420	Law Enforcement/ Local Government
37.420–37.860	Forestry/Power & Water Utilities Radio
37.860–37.980	Forestry/ Highway Maint./ Sp. Emergency
38.000–39.000	US Government
39.000–39.980	Law Enforcement/ Local Government
40.000–42.000	US Government
42.000–42.940	State Law Enforcment
42.940–43.000	Business Radio
43.000–43.180	Special Industrial Service
43.180–43.680	Special Industrial/ Paging
43.680– 44.600	Motor Carrier Radio
44.600–45.040	Law Enforcement/ Forestry
45.040–45.640	Law Enforcement/ Local Government
45.640–45.860	Law Enforcement/ Highway Maint.
45.860–46.040	Law Enforcement/ Special Emergency
46.040–46.500	Fire Radio Service
46.500–46.580	Local Government
46.610–47.000	FCC Part 15 Devices (Cordless Phones)
47.000–47.400	Highway Maint.
47.400–47.680	Special Emergency/ Special Industrial
47.700–48.540	Power & Water Utilities Radio
48.540–49.500	Forestry/Petroleum Radio Service
49.510–49.580	Forestry/Special Industrial Radio
49.600–50.000	FCC Part 15 Devices (Cordless Phones)

TUNING THE TUNES

Who says there isn't anything interesting to monitor in the 900 MHz band? Many listeners have searched through this range and ended up convinced that nothing worthwhile was happening here. Some have even come across music and stand even more convinced that they're hearing images. On the contrary, what you're hearing are things like the new 900 MHz cordless stereo headphone systems and Studio to Transmitter Microwave Links. Both operate in this band, but you'll need to switch to Wideband FM (WBFM or WFM) mode to hear them clearly. Search 902--952 MHz, you might be interested in what you hear.

EMERGENCY!

Readers have been asking where to find civilian and military emergency and Search and Rescue operations. Here's our concise list of where to look. ELT stands for Emergency Locator Transmitter, carried by all aircraft. EPIRB stands for Emergency Position Indicating Radio Beacon, commonly carried aboard ships. Aircraft or vessels in distress can be found on these frequenices, as well as rescue operations. If you don't have these numbers in your scanner, set aside a few memory positions for them now. It might be worth it.

26.620	Civil Air Patrol AM
27.065	CB Channel 9 Emergency
40.500	US Military Joint Op. FM
121.500	Civilian ELT/EPIRBs
121.600	US and Canada On-Scene Search and Rescue
123.100	Search and Rescue
138.450	Air Rescue Service On-Scene FM
138.780	Air Rescue Service On-Scene FM Discrete
143.900	Civil Air Patrol AM/FM
148.150	Civil Air Patrol AM and FM repeaters
156.300	Merchant ship/USCG Channel 6 On-Scene
156.800	Distress, Safety and Calling Maritime Channel 16
156.750	Class C (Maritime) EPIRB 15 second homing signal
243.000	Military UHF Aeronautical Emergency
259.000	UHF AM Air Rescue Operations
282.800	SAR DF and On-Scene Primary
381.000	Air Rescue Operations
381.800	US Coast Guard Aircraft Working Frequency

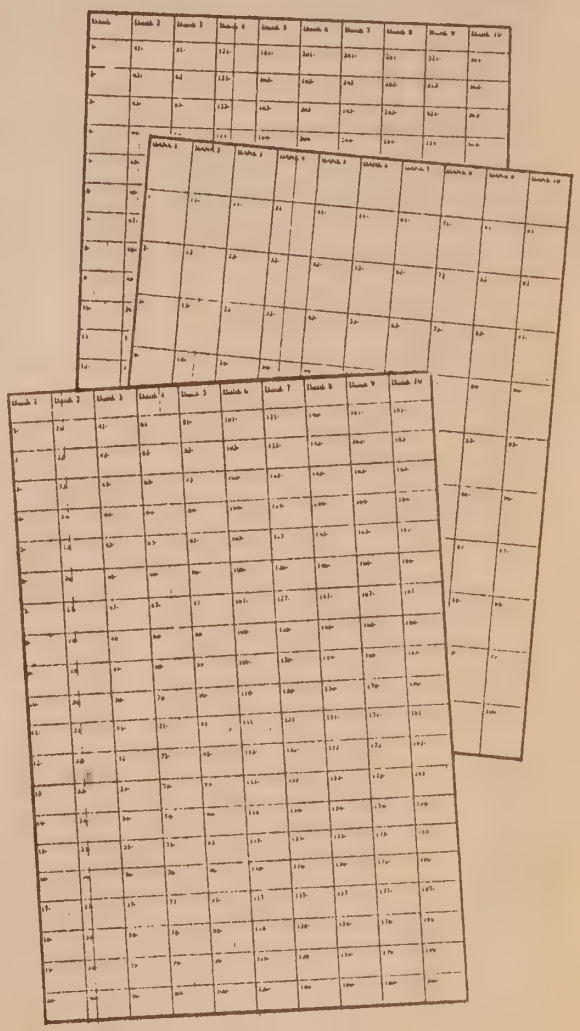
"Q-TIPS"

The telephone company is everywhere and you can keep an ear on Ma Bell simply by using your scanner. Repairmen can often be heard communicating on frequencies in the 451-452 MHz band. Tune around and see what happens!

Getting Your Scanner Organized

Simple Scanning *Projects*

By Wayne Heinen



Sounds a little funny doesn't it. Organizing your scanner (or scanners) is something that comes to mind the first time you want to monitor a multiple agency incident. You grab your scanner and start wondering "What bank did I store that agency's frequencies in?"

The best solution I've found is a plain paper grid. The ones pictured here are professionally prepared masters made with a com puter publishing program and then printed on a laser printer. You simply fill in the agency and frequency in the numbered square and you'll find what you need every time. I use a light lead pen cil so that I can rearrange things when needed without having to redo the entire grid.

You'll need to decide how you want to organize your scanner's banks. The organization needs to have some logical flow to it. I per sonally monitor the city I live in first. Bank 1 therefore contains Aurora Police channels 1, 2, 3, 4 and AFD Channels 1 and 3. I work in a court building that has Arapahoe County Sheriff's Deputies so I have loaded their three simplex security channels. My favorite traffic reporter is KHOW's Don Martin, his channel is loaded. In order to follow city wide major events, I've loaded Channel 4's news channels. I work for the county government and have their paging frequency loaded. That's my prime scanning bank.

I have intentionally left open channels in the first bank. In case some event would demand adding one or two additional frequencies for another agency. By doing this you can always modify your main bank to fit a given situation and go back to your original plan when the event is done.

My other banks are organized by type of transmission and by geographical area. I work in a County with some smaller suburbs and I have to drive across town for work. So bank number two contains the County Sheriff frequencies and the dispatch frequen cies of the suburbs I drive through. As I drive out of my city I switch from Bank 1 to Bank 2.

Bank 2 also contains duplicate entries from Bank 1, notably my traffic reporter and the Channel 4 news frequencies. This means I'm never trying to scan more than 15 channels at any given time. This fast pace let's you keep track of the events in the geographic area where you are. Let's look at the remaining banks to see how the rest of this falls into place.

Bank 3 is devoted entirely to cordless phones. Bank 4 is loaded with the major tower frequencies of Stapleton International Airport, two smaller general aviation air ports and Buckley Air National Guard Base tower frequency.

Banks 5 thru 6 are loaded with a few special purpose frequencies including two local shopping malls and some railroad frequencies. I can't tell you where they are, but

my filled in chart lets me switch to them whenever I'm in the area.

Bank 7 contains all the regions of the Colorado State Patrol. Since they're the primary law enforcement on the Interstate system, this allows me to keep track of smokey while I'm on vacation.

Banks 8 and 9 are totally blank. I keep them for loading special events. When going to an air show or traveling on vacation, I always take a frequency directory with me and use it to identify the frequencies of the local police and fire.

Bank 10 is loaded with a few special frequencies that are always locked out and can only be called up manually. By using the last two channel numbers (199 & 200) I can call up my local NOAA Weather channels. This is a real plus when I'm working outside and need to keep track of the changing weather.

In order to make this easy for you to do *National Scanning* has custom grids ready for you. Specify the number of channels that your scanner has when ordering. To order send $2.00 for 100 or 200 channels, $3.00 for the two page 400 channel grid and a self addressed stamped envelope to *National Scanning*, Box 360, Wagontown, PA 19367.

Everything is loaded in a manner that makes sense, for MY scanning needs. What are YOUR priorities? If you stop and think about what you want to monitor at different times or from different places, you will undoubtedly come up with a suitable bank loading plan. Once you've got it loaded and documented you'll be able to follow any event of interest without wondering "Where in the world did I put that frequency?"

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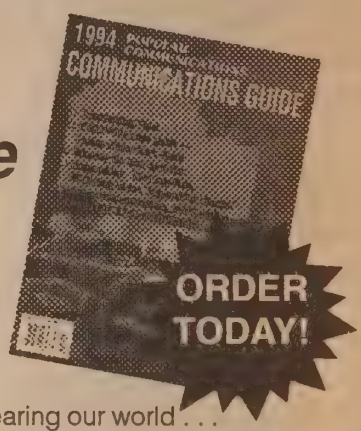

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Solving Problem Circuits

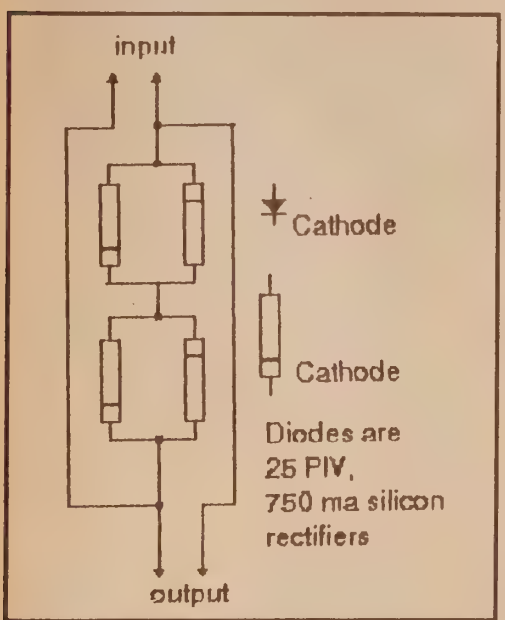
Mod House

BY JERRY PICKARD

This month, we'll start with simple problem solving circuits and then go on to greater things!

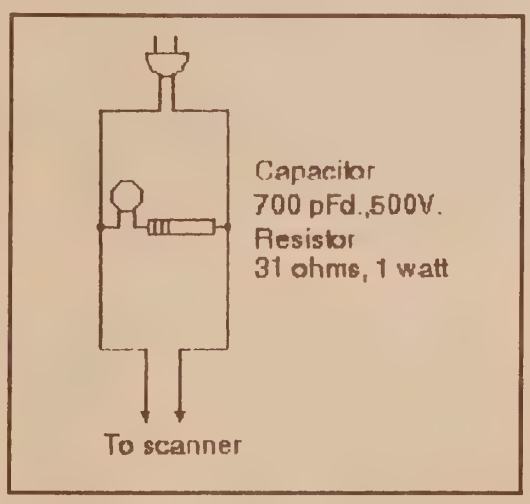
HEADPHONE NOISE CLIPPER

It's late at night, and you've got the 'phones on so the better half can sleep and suddenly, ouch! The transmitter next door down comes on and pops your eardrum! Here's an easy to make circuit that cuts off the loudest part of the signal and leaves you with reasonable volume otherwise. Since it works in microseconds, once you add it to your earphones, you won't even know it's there. With jacks and plugs, you can build it in a separate box, but actually, it is so small and simple you can just "hardwire" it into the headphones cord. The values used are just for 'phones, it won't work on a speaker circuit.



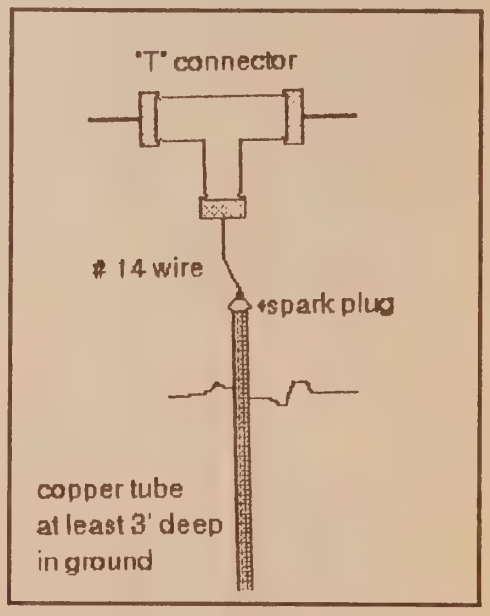
TELEVISION "BIRDIE" ELIMINATOR

One of the causes of "birdies", those noises that lock up your scanner in the search mode might very well be your own or that of a neighbor. This fix is so simple that it is worth building just in case! All it requires is a cap and a resistor in series across the scanner's line cord. The valves shown can be exceeded, but it's not a good idea to use anything lower. The little gadget will remove a lot of noises you hate!



CHEAP LIGHTNING ARRESTER

No guarantee comes with this very simple gimmick, but lacking any other lightning arrestor, it could save some of your valuable toys! The best protection is to disconnect every thing during a storm. (Gadzooks! just when I wanted to listen!) Normally, I'm opposed to any other connectors other than those absolutely required to get the signal from the antenna into the scanner, and this affair is a signal stealer! However, when it comes to protection vs. signal the choise gets easier. The copper tube is not the best choice for a ground rod, but it does accommodate the spark plug. As copper corrodes, (quickly!) the tubing needs to be replaced. Note: an easy way to sink the tube into the ground is to connect a garden hose fitting to it and let the water do the work.

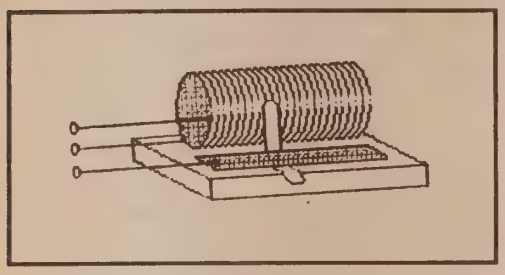


EASY SHORTWAVE RECEIVER

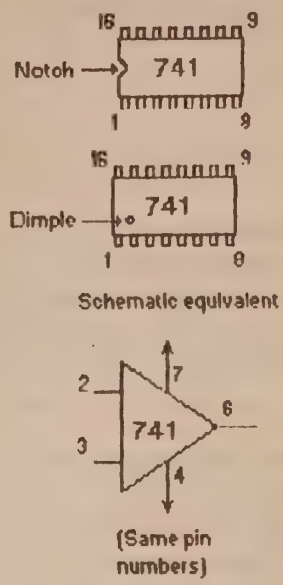
Here's a way to get those frequencies below the range of your scanner at very little cost, and have some fun at the same time! Even if you've never built

Theee modifications, like many modifications, are experimental in nature. The publisher of theis magazine doesnot test the accuracy of this material and therefore takes no responsibility with respect to the information contained herein. All questions and comments sholud be addressed to the author at Box 360, Wagontown, PA 19376. Any modificatione made to equipment are the sole and complete responsibilty of the owner. Modificatione are not recommended by man- ufacturers and invalidate the terms of your warranty. Use of equipment must be in com- pliance with federal, state and local ordinance.

any thing in your life, this simple circuit is so easy to make that it's nearly fail safe.The reciever is built around two common IC chips, both are inexpensive and easy to get.The drawing for those who have not had a chance to learn what's where in "chipland", and as you can see its pretty simple. Actually, both chips used in this circuit are just 8-pin chips (4 to a side) but the drawing is to clarify in a general way how chips



I.C. Chip numbering and I.D.



A chip may have any number of pins, but the same rules always apply. The first pin (number1) is always in the same position relative to the notch or dimple. The pins alwayscount from that point counter-clockwise around the chip. On a schematic, although the shape shown may be different, the same pin relationship is always true.

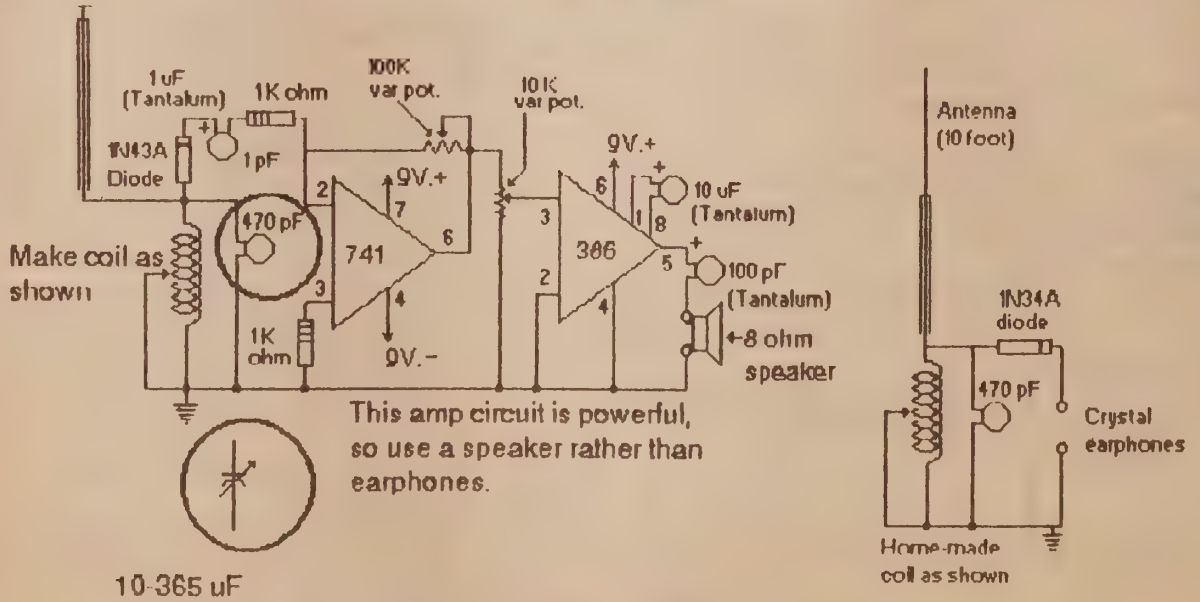
The chip is always numbered on the schematic (as 741, etc.)

are numbered.

First make the coil. Use #30 gauge magnet wire and wind it flat on a 35 mm plastic film can. The easy way to make a nice coil of this type is to use a piece of double-faced tape on the can and then wind the wire on the tape, whick keeps every thing in place. Once the coil is wound, with a little sandpaper, remove the enamel from the wire where the "slider" will make contact. At the same time sand the enamel at the wire ends to remove the enamel so as to make a good soldering contact.

The receiver can be built on vector (perf) board, or on a solderless breadboard. Nothing is especially critical, although as always short leads are better. Go easy on the heat when working with the chips, or better yet, use the proper IC sockets and avoid heating the chips at all.

I've included three variations on the basic circuit, but all work in the same range, roughly from the bottom end of the AM broacast band down to 1 MHz. If you make the version using the variable capacitor, by using the slider coil, the frequency will change. The version with the amplifier chips (741-386) is a nice introduction to using IC chips if you have not yet explored that area of electronics. This is not a very sophisticated receiver, but for well under 10 bucks it does a very good job! A good ground and antenna will give surprising results.



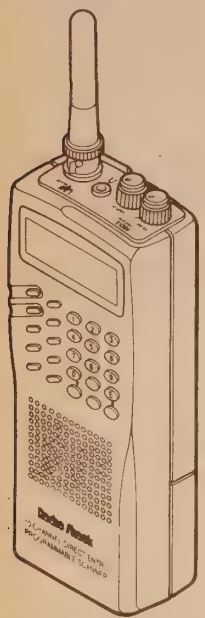
New Uniden and Radio Shack Scanners

Uniden BC-220XLT Up Soon

We got a chance to test the new Uniden Bearcat 220XLT scanner and it's really nice. A small handheld unit, it features good looks, good frequency coverage, and lots of features, like 200 channels and a staggering 300-per-increment search rate. There's only one bit of bad news. You'll have to wait until May for this one to appear on store shelves. In the meantime, be sure to check out our two page hands-on review on page 49 of this issue.

New PRO-51 Scanner

Radio Shack's new 200 channel handheld is now on dealer's shelves. The PRO-51 is a nicely sized, slick-looking radio with great frequency coverage: 29-54 MHz, 108-174 MHz, 406-512 MHz and 806-956 MHz (minus cellular, of course). The retail price of the PRO-51 is $299.99. The PRO-51 arrived here just a couple of days before press time, not enough time to give it the attention it deserves. So look for one of our famous no-holds-barred reviews in the next issue of National Scanning.



Metro Concepts Scanner Planner

Last year, a fellow named Dave Garofalo came out with an interesting new scanner directory for the New York City metropolitan area. What made it especially of note was that this was no list of frequencies taken from some dead government list. Instead, Garofalo compiled his list from exclusively active frequencies. The first edition received a lot of acclaim. Now Garofalo has come out with a new edition of Metro Concepts Scanner Planner, this time encompassing the New York City Metropolitan area, New Jersey and the Greater Philadelphia area. There's even a smattering of Connecticut and Delaware. Again, the book concentrates only on active frequencies as compiled by the author. The listings are packed into 140 easy-to-read pages and cover everything from police and fire to business and the FBI to Atlantic city casinos, major league sports teams, correctional facilities, the news media, universities and colleges, and much more – more than double the original book's coverage. The material is presented in two ways: alphabetically by user and by frequency. The Metro Concepts Scanner Planner is available DX Radio Supply for $19.95 plus $4 UPS.

Many of the new items previewed here are available through NatScan's retail arm, DX Radio Supply. To place an order, please send your check or money order to DX Radio Supply, Box 360, Wagontown, PA 19376 or call 610 273-7823 with your VISA/Mastercard. It's a pleasure to serve you.

New Products Preview

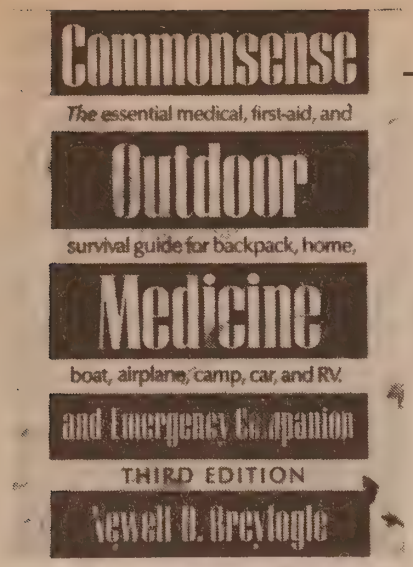
By Larry Miller

MD/DC/VA Frequency Directory

Every year the Southern Patuxent Amateur Radio Club (SPARC) puts together a frequency book for scanner listeners in the Maryland, DC and northern Virginia areas. This year's 115 page edition boasts over 800 new listings, coving everything from police and fire to emergency medical, military, air and a lot of intiguing signals of the type that can only be found in our nation's capital. The SPARC Maryland, DC and Northern Virginia frequency directory is availale for $12.95 plus $4 UPS from DX Radio Supply.

Partial Revision of Bearcat Books

Parts of two Betty Bearcat frequency directories have been revised. In the Great Lakes regional directory, the states of Illinois, Indiana and Kentucky have been "entirely revised." In that book the states of Ohio, Michigan and Wisconsin contain minor revisions. In the Mid Atlantic regional book, Delaware, Maryland, New Jersey and the District of Columbia are completely revised. Pennsylvania, New York, Virginia and West Virginia have minor revisions. All states will be completely revised in later editions of the books. You can get your copy $14.95 plus $2 book rate shipping.

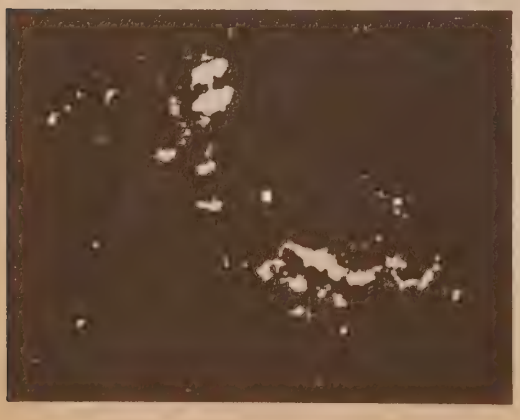


Commonsense Outdoor Medicine

For people who are as active as scanner people are in community service and outdoor pursuits, *Commonsense Outdoor Medicine* makes alot of sense. In one handy guide is everything the non-medical person needs to know about medical emergencies and first aid. Topics covered include: Techniques of emergency care, shock, respiratory and circulation trouble, wounds, sprains, fractures, poisons and drugs, bites, burns and more. An added benefit is a second section on how to avoid trouble outdoors and in the wilderness. Loaded with pictures and clear step-by-step instructions, this guide is a perfect companion to you scanner and other emergency supplies. DX Radio Supply has it for $14.95 plus $4 UPS.

Space Shuttle on Your Scanner

Most people are amazed to find – some outright don't believe – that you can hear the space shuttle on their scanners. Given the appropriate frequency, you can and it's easy and, in most places, crystal clear. The Outer space Frequency Directory is a 57 page book that's packed with these and other frequencies that'll put you in the front seat of the action when it comes to America's space program. From 1,800 kHz to up above 300,000 MHz, there are over 2,200 space and space-related frequencies for eavesdropping on satellites, space shuttles, space stations, interplanetary space probes and even non-human signals arriving at earth from deep space. All of the entries are listed in a cross-reference index that allows you to look up a particular type of transmission and quickly locate the frequency. The directory also explains how to tune in space signals, summarizes the various types of signals and where to look for them. An extensive list of abbreviations and key words is also included.



The *Outer Space Frequency Directory* is written by Anthony Curtis, the author of *Monitoring NASA Communications*. It's available from NatScan for $17.95 plus $4.00 UPS.

Roll Your Own Electronics

Electronic Rainbow is a company offering electronics kits by mail. The kits include a radar signal detector ($12.95), an electronic timer ($9.95) and a wireless FM microphone ($14.95), among others. The prices of the kits are incredibly low and they work well to boot. But wait, before you start thinking that this is too good to be true, it is. We ordered a handful of the kits and had two major beefs that we think are serious enough to warrant your attention. First, the instructions are terrible; a schematic and bad xerox of the printed circuit board with lines weaving in and out. Second, the printed circuit boards are small – far too small for some of the components. When we talked to Rainbow Sales Manager Hal Mandery, he expressed surprise. Most of his clients, he explained, wanted them smaller. Mandery did say that they were in the process of upgrading the instruction manuals however and that there were plans for "deluxe" kits (presumably with more reasonably-sized printed circuit boards) in the works. Until that time, we suggest that, unless you have exerience in electronics – can read a schematic sufficiently to assist in deciphering the instructions and are comfortable in soldering in a near sub-miniature environment – you wait until we have a chance to review the "deluxe" kits. Rainbow Electronics is at 6254 LaPas Trail, Indianapolis, Indiana 46268.

25 Communications Plans

Incredible Audio and Video Projects You Can Build is for electronics enthusiasts who want to learn how communications systems – from audio to UHF to light – work. Authors Rudolf Graf and William Sheets have plans for building an audio power amplifier, a carrier-current transmitter, a shortwave converter, and 22 other projects. We especially found the plans for the digital audio scrambler/descrambler interesting, given the increasing number of digital transmissions found on the scannerbands. There's also information on printed circuit board fabrication and layout. *Incredible Audio and Video Projects You Can Build* is available from the DX Radio Supply for $16.95 plus $4.50 UPS. The book ships in April.

FM Atlas

Bruce Elving has been putting out the FM Atlas for more years than I'll admit that I remember. It's an old favorite, both because I've read it so long and because it's so helpful. What makes FM Atlas unique is the fact that it lists FM radio station on a map. For those of us who enjoy exploring the FM band and listening to distant stations, it provides instant gratification. I can see immediately where the station is that I heard. It's also infinitely practical for anyone who travels, whether on business or for pleasure. No matter where you are, all you have to do is find where you are on the map and you have a complete directory of every radio station in the area. A list in the back will even tell you station formats. FM Atlas is a handy book. We recommend it highly. NatScan readers can get a copy for $14.95 plus $4.50.

White Papers

If you're a shortwave listener thinking about buying one of the high-powered, big-dollar rigs, you really ought to check out International Broadcasting Services' White Paper equipment reviews. These 24 page reports are the ultimate equipment review, providing all the information you need to know before plunking down your hard-earned dollars. The latest edition to the line-up of White Papers is on the Yaesu FRG-100, a radio with a $669.00 list price and an "excellent" rating – just be sure you get the right "version" of the '100. Or get your own copy of the White Papoer for $5.95 plus 2.00 shipping.

Verifying Low Band Stations

VHF Low Band DX

By Brian Webb

Welcome to another installment of VHF Low Band DX, a column devoted to the reception of distant 30 to 50 MHz signals via skip. In this issue I'll share what's been heard and discuss the topic of verifying low band stations.

Sporadic-E Reception in Quebec

Norman McLellan of Beauport, Quebec, Canada ranks among the most active 30 to 50 MHz skip monitors in North America. Nearly every day, he searches the VHF low band for distant signals. During 1993's mid-year E-skip season, Norman's dilligence allowed him to log more than 95 distant stations. A sample of his loggings are listed in table 1.

California Low Band Reception

The decline in solar activity is taking its toll on F2 (very long distance) reception of distant sigals. On most days, the skip is confined to the lower part of the band between 30 and 33 MHz. Fluctuations in solar activity result in no skip being heard on some days while a few days have had F2 skip on frequencies up to 35 MHz. Nevertheless, a combination of persistence and an off-season sporadic-E opening have enabled me to log several new stations in recent months. Table 2 summarizes my 1993-1994 F2 season loggings.

My most interesting loggings during the current F2 season occurred on November 25 at 16:59 UTC on 31.480 MHz. The oil tanker Gulf Miss was heard giving a daily status report to Harvey Base in Harvey, Louisiana. What's interesting about this logging is the tanker's position: 07 26' north and 102 59"west. That translates to a point several hundered miles off the coast of Mexico in the Pacific Ocean. The logging is significant because it's only the second time that I've logged a low band station from the Asia-Pacific area.

Verifications

An interesting facet of the radio hobby involves collecting verifications. This entails a listener hearing a station of interest and sending the station a letter describing the programming heard and reception quality. As a courtesy, the station oftens sends the listener a postcard (QSL card) or letter verifing reception of the station.

Many shortwave, AM broadcast, and other stations will verify reception. VHF low band stations will as well, but a different approach is needed. While most 30 to 50 MHz stations would find a

Natural Gas Pipeline Company of America

July 21, 1993

Mr. Brian Webb

Thousand Oaks, CA 91360

Dear Brian:

This letter is to confirm your reception on our radio station KNBY979 on June 16, 1993 at 0139 UTC. The data on our transmitter site is as follows:

Location:	14 Miles NNE Evanston, WY, Uinta County
Latitude:	41-27-07
Longitude:	110-53-05
Ground Elevation:	7080 ft.
Height to tip of Antenna:	180 ft.
Frequency of operation:	33.3 MHz
Antenna:	OMNI OB-201, using 175 ft. of LDF5-50 7/8 INCH HELIAX
Transmitter:	300 watts, Motorola MICOR with Motorola MRTI 1000 interconnect for two phone lines and automatic ID'ER.

This base station is used for local company communications for Natural Gas Pipeline Company of America (NGPL), Station 730. NGPL is owned by MidCon which is in turn owned by Occidental Corporation. The function of Station 730 is to compress natural gas which serves many towns / sites in WY, NE, IA, and IL.

We quite often receive strong radio signals from other NGPL stations located in NM, TX, and LA. This is the first time, that I am aware of, that our signal has been confirmed from CA.

Best of luck in your future DX chasing. For your information, I am also an Amateur Radio Operator, call N7LNY.

Sincerely,

Michael A. Corder
District (Communications / Gas Measurement) Technician

Figure 1. Brian Webb received this verification for his reception of KNBY9, Evanston, Wyoming on 33.300 MHz via E-skip.

reception report from a distant listener interesting, the reader probably wouldn't have a clue what you're talking about if you ask for verification. Therefore, enclose a sample verification letter with your reception report. This technique improved my verification response rate from 25 to 50%.

If you send a reception report and verification letter, but don't get a reply, send a photocopy of your reception report and sample letter to the station. Better yet, if the station is operated by a large company or state or local government agency, send your duplicate reception report and sample verification to the company president or goverment agency director. If you're lucky, you'll receive a verification like the one shown in Figure 1.

Table 1
Selected Sporadic-E Loggings from Norman McLellan, Beauport, Quebec

DATE (1993)	TIME (UTC)	FREQ. (MHz)	CALLSIGN	LOCATION	COMMENTS
JUN 05	22:08	42.060	KAA202	Jackson County, MO	Missouri State Highway Patrol, Troop A
JUN 12	15:56	33.440	Cherokee	Cherokee County, GA	Cherokee County Fire Department
JUN 18	16:33	42.060	KAA203	Eastern MO	Missouri State Highway Patrol
JUN 19	01:07	33.060	WNAL738	Harrisonburg, VA	Operated by Rockingham County
JUN 25	15:00	33.480	KGE450	Allentown, PA	Operated by Lehigh County
JUN 25	16:00	33.980	WNCT988	Salisbury, MD	Operated by Wicomico County
JUN 25	18:07	37.700	KQA948	Lima, OH	Ohio Power Co.
JUL 01	01:42	39.240	KSA907	Pontiac, IL	Operated by Livingston County
JUL 01	-- --	33.560	KNBT942	Page County, VA	Operated by Page County
JUL 24	17:00	39.120	KQF889	Southern or central VA	Operated by state of Virginia
JUL 24	17:05	39.100	WNAD468	Rock Hill, SC	Operated by York County. York County EOC
JUL 25	20:36	33.780	KGE734	Clinton County, PA	Clinton County Fire Department
JUL 25	23:42	33.740	KDA670	Page County, VA	Operated by Page County
JUL 26	00:07	42.440	KZA240	Ashkum, IL	Illinois Department of Law Enforcement
JUL 27	22:10	42.060	KAA270	Poplar Bluff, MO	Missouri State Highway Patrol, Troop E
AUG 05	16:25	35.100	KSH994	Madison, WI	Operated by Volt and Sons, Inc.
AUG 06	04:16	42.340	KSB231	Crestwood, IL	Illinois Department of Law Enforcement
AUG 06	04:30	42.440	KSF947	IL	Illinois Department of Law Enforcement
AUG 12	01:02	33.080	WNKJ860	Saint Mary's County, MD	Operated by Saint Mary's County.
AUG 17	03:39	42.420	KSA764	West Lafayette, IN	Indiana State Police

Table 2
Loggings from Brian Webb, Thousand Oaks, California

DATE (1993)	TIME (UTC)	FREQ. (MHz)	PROP. MODE	SIGNAL TYPE	LANG-UAGE	CALLSIGN	LOCATION	COMMENTS
SEP 16	21:20	32.820	F2	FMN/CW	--	LSJ503	Buenos Aires prov., Argentina	Paging station. Morse code ID of "LSJ503 BS AS" heard.
OCT 01	20:45-20:55	33.350	F2	FMN	SS		Cuba	Traffic regarding an auto and driver
OCT 24	19:18	31.100	F2	FMN	EE	Gainesville	Gainesville, GA	Georgia state fish and game
OCT 24	19:20-19:21	31.100	F2	FMN	EE	KII368	Metter, GA	Georgia state fish and game
OCT 24	20:04	31.100	F2	FMN	EE	KIE370	Macon, GA	Georgia state fish and game
NOV 01	19:07	30.940	F2	FMN	EE	KIY388	Okeechobee, FL	South Florida Water Management District
NOV 04	18:18-18:22	31.940	F2	FMN	SS		Paraguay(?)	Traffic regarding repair of a water faucet.
NOV 05	18:03	31.140	F2	FMN	EE	KII366	Thomson, GA	Georgia state parks
NOV 08	19:50	30.920	F2	FMN	EE	KWH283	Durham, NC	Lincoln Community Health Center
NOV 08	19:57	31.000	F2	FMN	EE	KST445	MD	Operated by Earl Brown, Inc.
NOV 15	21:58-22:02	30.900	F2	AM	EE	Radio Havana Cuba	Cuba	Harmonic of 6.180 MHz signal
NOV 18	19:08	37.500	Es?	FMN	EE	KXM580	Lufkin, TX	Texas Power and Light
NOV 18	19:32-19:36	44.350	Es	FMN	SS	Roberto Garcia Almeira	Northern Mexico	Agriculture traffic. Mention of a failed valve and warehouse in Culiacan.
NOV 18	19:53	37.500	F2?	FMN	EE	KGX802	Rector, AR	Clay County Electric Cooperative
NOV 25	16:59	31.480	F2	FMN	EE	Gulf Miss	Eastern Pacific Ocean	Oil tanker Gulf Miss located at 07°26'N 102°59'W giving report to Harvey Base.
DEC 02	19:07	30.880	F2	FMN	EE	KDN365	Saint Henry, OH	Operated by Cy Schwieterman, Inc.
DEC 28	19:16	33.380	F2	FMN	EE	KLQ767	Beverly, WV	Columbia Gas Transmission Corp.

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Ready for the Big One?

with Gene Hughes

SCANNER SCHOOL

Los Angeles, Ca. January 17, 1994. Ask anyone what time they woke up that morning. The answer will be the same: 4:32 am! The whole house was shaking violently. Instinctively, we pulled the pillows over our heads to protect ourselves from flying and falling objects. The sounds of our house creaking and groaning were mixed with those of crashing glass. My spouse reached out for a comforting hand, but found, instead, the furry paw belonging to one of two seventy-five-pound Golden Retrievers who were frantically trying to get under the covers with us. Later, we would laugh.

Just when we thought it would never stop, it did. We reached into the drawer next to our bed. Flashlight? Check! Portable radio? Check! Scanner? Check! We punched in bank ten, and it was alive with messages: "All units, we are in the 'earthquake' mode." There was no panic in the fire dispatcher's voice. It was just like the drills they went through every month, but this time it was for real. Mother nature had slammed the door and turned off all the lights. Now, years of planning were paying off. All public safety radio communications facilities had been designed to withstand quakes of at least 8.0 on the Richter scale. Emergency generators kicked in. The Medical Alert Center (MAC), heartbeat of the area hospitals' emergency system, was knocked out, but the backup MAC was intact. When the first victims arrived at hospitals, the triage teams were ready and waiting. Thanks to those big fat towers, the cellular phone system remained in service.

Those of us who own scanners have virtually slept with them, waiting for the next aftershock. We had long ago organized our channel banks, not just for emergencies, but for a variety of situations. Our intent was to be able to react to various situations with a minimum of time and effort. A quickly unfolding emergency won't wait while you look up frequencies in your book: During a major disaster, you may not be able to. With this in mind, we would like to share some of our programming techniques with you.

Since the various brands and models of scanners have different channel capacities, we will assign letters to our frequency groups. The number of banks you use for each group will depend on your scanner and requirements. With the allocation of the 866-869 MHz band to Public Safety, frequencies are being changed at a rapid rate, so be sure that your frequency information is up to date.

Group A has the everyday frequencies we monitor while going about our normal home and

In the wake of the quake...

"Those of us who owned scanners virtually slept with them. We had long ago organized our channel banks."

Remains of Bullock's Department Store at the Northridge Fashion Center. Note news media in the foreground. Photo by Brian Webb.

work routines. We include the local fire and police dispatch channels, aeronautical emergency frequencies (121.5 MHz and 243.00 MHz), and a low-band fire channel to detect skip when it starts to come in.

Group B consists of our "fooling around" frequencies: those we like to listen in on every once in a while.

Group C is our "siren bank." We switch over to it when we hear a siren in the neighborhood (items in parentheses are suggested if applicable): police dispatch, sheriff dispatch, highway patrol dispatch, fire dispatch and response, VIP escort (when the President is in town), ambulance dispatch, (airport emergency, if different from local channels), (military base emergency).

Once we've determined the nature of the emergency, we can switch to the related bank of channels.

Group D is programmed for police tactical frequencies and law enforcement mutual aid.

Group E channels are fireground and fire mutual aid frequencies.

Group F is what we call our "mystery" bank. Each year, when the frequency books come out, they always contain some new channels that we tune to and find nothing but silence. Since licenses are usually issued well before the frequencies are used, we put these in our mystery bank. Occasionally, when we do some searching, we'll find an unknown channel with very little activity. Rather than sitting around for hours waiting for someone to say something, we add it to our mystery bank. We include this bank in our daily scan pattern until we can identify the use of the frequencies.

Group G is for local major emergencies such as a plane crash, multi-alarm fire, etc. We use it with one or more of the other groups. We include the frequencies used by the media to dispatch reporters, photographers and TV minicam crews. There may be other agencies in your area that respond to such incidents.

Finally, there is Group H, which we suggest for anyone living in an area where there might be floods, hurricanes, tornados, earthquakes or a deep freeze. In addition to the usual emergency frequencies, consider adding these: Emergency Management (once known as Civil Defense), street and highway maintenance department for road conditions, American Red Cross (47.42 MHz), local amateur radio disaster frequency, marine distress (near navigable waterways) and Federal Emergency Management Agency (FEMA).

Preprogramming your scanner should be one part of an overall preparation and plan for that disaster that "can't happen to me." Trust us, it can! The Red Cross and other organizations can provide you with a list of items to prepare. At the top of the list are the things you may need in the first few minutes (flashlight, radio, first aid kit, wrench for shutting off the gas, portable scanner). They should be kept close at hand: a nightstand by your bed is a good place. One item not on most lists is a portable two-way radio: CB, General Mobile Radio Service (GMRS) on the REACT channel, or amateur. It could be your only way of getting help.

The balance of the list consists of the items you will need to survive for a week without utilities or access to the outside world. Keep these in a secure place that has easy access. You can store them all in a large plastic trash bag placed inside a 32-gallon garbage can purchased for just that purpose. Be sure to include plenty of batteries.

A final comment on the earthquake. Television has brought you such dramatic footage of disasters (hurricanes, fires, floods and even tornadoes) that you could almost feel their fury. There are no films of the earthquake: no way to convey to you how it looked and how it felt. Don't let that make you think it was "no big deal." In one brief moment, over fifteen thousand dwelling units were destroyed or severely damaged.

January 17 was the birthday of our friend, Mel Saltzman (we promised to give him credit). When telephone service was restored the next day, we called Mel to wish him well and kidded him about the events of the day before. His reply to us was, "They misunderstood me. I told them I wanted a cake, not a quake."

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–Mark Rothberg, Brooklyn, New York

Things That Work

Uniden's BC 220XLT Scanner

It's One of a Kind

"How would you like to take a look at one of the new Uniden BC 220XLTs? Mind you, it's only an engineering prototype but it should give you a good idea of what we're up to here at Uniden." We don't get to see a lot of new product from Uniden so you don't have to make an offer like that to us more than once. To heck with playing cool. "By the way, this is the only one we've got. You can have it for 24 hours. It's worth about $6000.00. Look for it tomorrow." "Tomorrow" arrived but the pricey one-of-a-kind scanner did not. We started to get nervous. By nightfall, we were getting scared. We had been told that the radio would arrive by private courier. We were about to abandon all hope when, heading for the car sometime after 11, something was noticed down the driveway. There, hanging from the mailbox, at the end of a long, backwoods rural road, hung $6,000.00 worth of one-of-a-kind-scanner in a plastic bag, covered with snow, abandoned by the private courier. I immediately picked up the phone and called local scanner expert Mark Swarbrick. "You got a what?" he asked? "I'll be over first thing in the morning," he quickly answered. "But you work," I protested. "What about your job?" "I'll quit. See you in the morning."

An engineering prototype is a working mock-up of a new scanner. The reason that the price is so high is because it's more-or-less hand-made. When the unit gets into production, the economy of scale goes into effect and you get the mass-produced version at the mass produced price. In between those two steps can occur any number of changes but usually, what you see when you get a prototype is what you get when the final product hits the streets. Assuming that's the case with the '220XLT, scanner listeners should be very happy.

This is a good looking radio. Gone forever is the old type "brick." The '220 is a handy size, measuring 6" high by 2½" wide by 1¾" wide. There are no sharp edges. Everything has a sleek modern look, even down to the handsomely tapered antenna. Swarbrick, a very "performance" kind of scanner listener, was so taken enough by the physicals to utter, "nice look!" And this from a guy who usually talks only about sensitivity specs and coaxial velocity. He'll no doubt deny this uncharacteristically emotional outburst later.

The 220XLT is a 200 channel scanner with some very nice features. First is speed. This baby features "twin turbo," Uniden's word for "lightning" when it comes to searching. We're told that it'll do 300 increments per second (on bands with 5 kHz steps) and although we have no way of formally verifying that, I can tell you that I certainly have no reason to doubt it. This really moves. In the scan mode, it'll do 100 channels per second.

Frequency coverage is really solid, too. It goes from 29 to 54, 108 to 174, 406 to 512 and 806 to 956 (minus cellular, of course). That includes, among others, police, fire, and emergency medical services, ham radio, aircraft, military, business, cordless phones, the federal government, and much more. One nice feature: the prototype has a frequency chart stenciled on the outside of the battery compartment door. While this will do little to help sales of NatScan's Pocket Frequency Guides,

By Larry Miller

Things That Work

it's very helpful.

Programming the BC 220XLT seems to have been simplified. Programming a scanner to search between two frequencies can, with some scanners, require so much button pushing that it leaves me dazed and discouraged. It certainly doesn't make the search process any fun. But with the 220XLT, you simply put the scanner in the manual mode, punch in the lower frequency of the range you want to monitor, then punch in the upper frequency of the range you want to monitor, and hit "search." That's it. You don't need a third hand and you don't have to stand on your head.

Frequencies can also be obtained by using the pre-programmed service search. Now, before any of you go ballistic, this is not a scanner with a pre-programmed bunch of frequencies that aren't active in your area. These are pre-programmed service "ranges." Hit the service button once and the scanner searches through the police bands. Hit the service button again and it goes through fire and emergency frequencies, the third time setting off a search through aero frequencies and the final toggle sets off a search of the marine bands. There is a separate weather button for finding 24-hour a day NOAA weather forecasts. Additonally, there are 10 priority channels, which the scanner samples repeatedly for action as you scan your favorite frequencies.

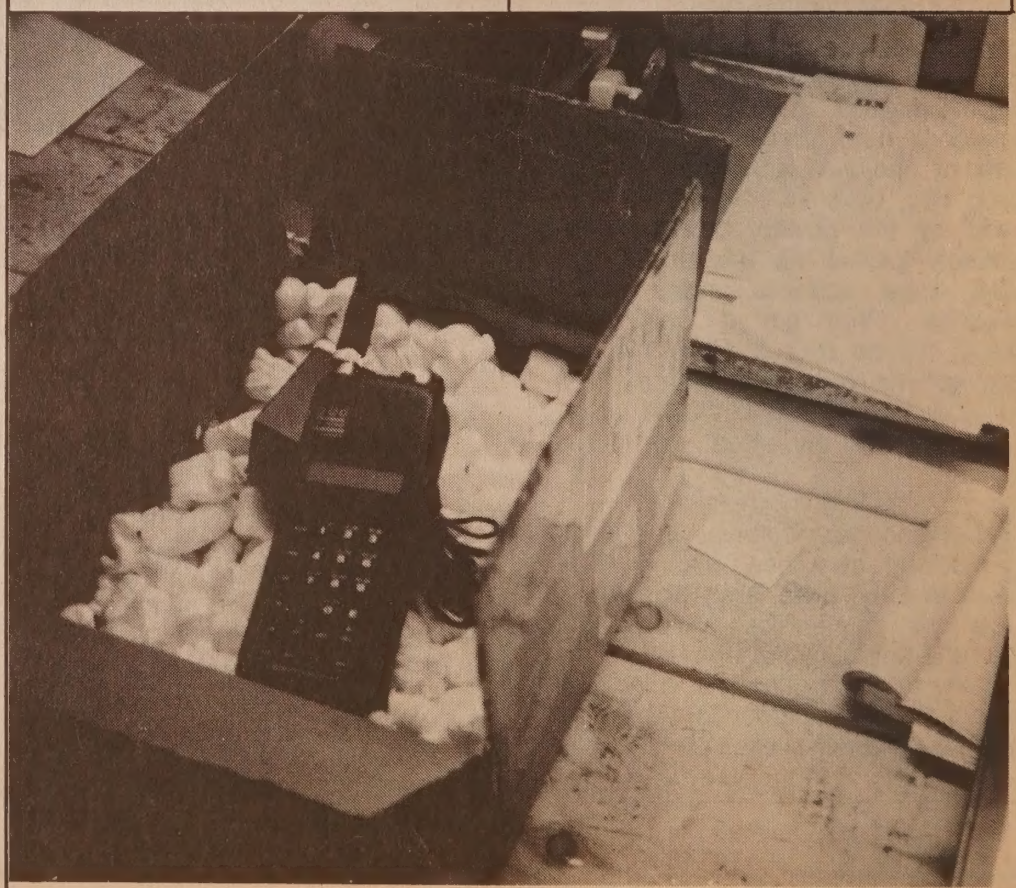
The '220XLT also has a data and birdie elmininations feature. Down on the lower right hand side of the keypad is a button labeled "data." When you push it, a tiny "data," with the internaitonal sign for "no" (a slash through it) appears on the LCD readout. I, testing the unit, could not specifically verify the ability of the scanner to block out birdies except to note that I did not discover any while scanning. Birdies, for those of you new to this adventure, are "ghost" signals, generated by the scanner's own circuitry, that can cause the scan function to stop and lock up. You know you've hit a birdie when you get what sounds like a very strong signal that never goes off and never says anything.

As for the '220's data elmination circuitry, we found that it did successfully elminate false "stops" by the scanner on the data channels. To be more precise, the scanner does still stop on these noisey channels but in less than a second after stopping, it moves on. It's not 100% foolproof as we noted it stopping – and staying – on certain guard tones, but for the most part, it'll make monitoring a lot less nerve wracking for those who live in areas where data transmission is on the rise. Power: the 220XLT operates on AC or DC power. You can use the wall adapter, which comes with the unit, or the included nicad batteries. Again, while we didn't have the time to put this through rigorous day-in-and-day-out testing, we got the feeling that these nicads just wouldn't quit. Are they different? Is it our imagination? Only time will tell. Another observation is on the effectiveness of the antenna that comes with the '220. There was a time when you could make a good living from selling replacements rubber duckies for the below-par antennas that came with a scanner. The one that came on our scanner was first class.

The '220 is packed with other goodies. There's a memory backup, low battery indicator, and a backlite for the LCD that can be turned on – and left on as opposed to display lights that you turn on and then they automatically turn off after 5 seconds. This is especially valuable if you find yourself using the scanner in the dark, like at bedside or in the car. Then there's the earphone, belt clip and the usualy gaggle of accessories and you've got a cutting edge scanner.

We found the BC 220XLT to be a first class scanning radio. Its speed is stunning. It's looks handsome. It's performance is very good. We really liked it. And we think that you will to.

The Uniden BC 220XLT should be on your dealer's shelf by May. Suggested retail price is $419.95; look for it in the $399.00 or less range.



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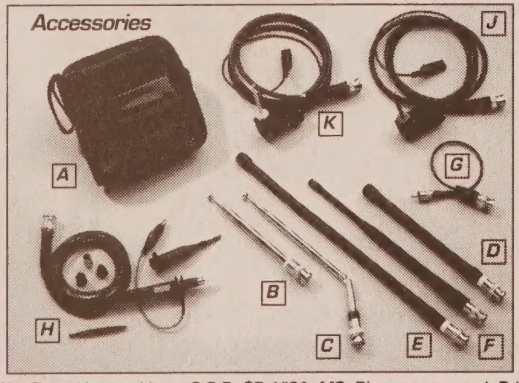

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